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ABSTRACT BOOK

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Abstract no.: 26919

PLATELET-RICH PLASMA: NEW CLINICAL APPLICATION: A PILOT STUDY FOR TREATMENT OF REFRACTORY TROCHANTERIC BURSITIS

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Introduction: Trochanteric bursitis is characterized by chronic pain over lateral aspect of hip. Treatment ranges from physical therapy, analgesics, corticosteroid injection to surgery in intractable cases. We studied use of Platelet Rich Plasma injections in patients who had persistent symptoms despite prolonged treatment.

Materials and Method: 9 patients (2 males & 7 females) with mean age of 64 years (range 50 to 82) were injected with 6 cc of Platelet Rich Plasma obtained from centrifuging patients own blood. The mean duration of symptoms for 9 patients was 17 months. All patients had steroid injections on at least 2 occasions and local ultrasound. All the patients had spontaneous onset of symptoms except one who developed post Total Hip Replacement. 1 patient had bilateral symptoms and was injected on both sides. 4 patients were followed up to 3 months and the remaining 5 for an average of 8 months.

Results: Mean modified Hip Outcome scores were 35/100 pre-procedure. They improved to mean of 57.3/100 at first follow up of 3 months for 10 hips, before declining to 39/100 at an average of 8 months for the remaining 6 hips with longer follow-up. No adverse effects were noted.

Discussion: PRP has shown significant improvement in conditions like Lateral Epicondylitis and Jumper's knee. Other studies have however denied benefit in conditions like TA tendinitis. For refractory trochanteric bursitis, our experience suggests that although the symptoms are better at short term follow up, the results at greater follow up are disappointing.

Abstract no.: 26922

UNUSUAL BREAKAGE OF DYNAMIC HIP SLIDING SCREW WITH REPEAT

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Introduction: Mechanical failure of DHS is mainly in the form of cutting out of screw. We report an unusual mode of failure, where the screw broke in situ at its junction with barrel. While underlying primary inter-trochanteric fracture remained un-united, there was a new stress fracture at sub-capital region which was managed with partial removal of original metalwork and repeat fixation with two cannulated cancellous screws. **Case Report:** A 59-year-old Caucasian male diabetic patient with below knee amputation sustained an inter-trochanteric fracture which was fixed with DHS after closed reduction of the fracture. The patient made an uneventful recovery. He continued to mobilise full weight bearing using his prosthetic limb for over 20 months, when he started getting a dull ache in the affected hip, without trauma. A few weeks later, he suddenly had acute exacerbation of the pain and could not mobilise. His x-rays showed a broken DHS screw at the junction where the screw met the barrel. CT proved non-union of inter-trochanteric fracture and in addition a new fracture line at the sub capital region. This was fixed with two 6.5mm cannulated cancellous screws passed superior to the Dynamic Hip Screw. The original metalwork was largely kept in situ. The patient made an uneventful recovery. **Conclusion:** An underlying non-union of the primary inter-trochanteric fracture in a patient with ipsilateral below knee amputation causing increased stresses on the Sliding screw leading to its breakage and a superimposed sub-capital fracture managed by repeat internal fixation, makes our case unique.

Abstract no.: 26926

A COMPARISON OF FIXATION TECHNIQUES FOR DISTAL FEMORAL VALGUS DEFORMITY CORRECTION: FIXATOR ASSISTED NAILING VERSUS FIXATOR ASSISTED PLATING

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BACKGROUND: Fixator assisted nailing (FAN) and fixator assisted plating (FAP) are two techniques that can be used to correct femoral valgus deformities. Although FAN violates the knee joint, FAP requires a large exposure. The aim of the present study is to investigate if there is a difference in accuracy of correction when comparing both techniques. **MATERIAL & METHODS:** We reviewed the medical records and radiographs of all patients who underwent surgery for correction of femoral valgus deformities within 7 years. **RESULTS FAN:** Twenty extremities (18 subjects) were treated using FAN. Seven male and 11 female subjects with an average age of 36 years (14-68 years) were included in the study. Average pre- and postoperative mechanical lateral distal femoral angle (mLDFA) was 81° (67-86°) and 89° (80-100°), respectively ($p=.009$). Average pre-and postoperative medialproximal tibial angle (MPTA) was 88° (62-100°) and 88° (78-96°), respectively. Average follow-up was 17 months (1-68 months). **FAP:** Seven extremities (six subjects) were treated with FAP. Two male and four female subjects with an average age of 16 years (15-19 years) were included in the study. Average pre- and postoperative mechanical lateral distal femoral angle (mLDFA) was 80° (71-87°) and 88° (81-94°), respectively ($p<.001$). Pre-and postoperative MPTA was 90° (82-97°) and 88° (83-94°), respectively. Average follow-up was 11 months (2-56 months). **CONCLUSION:** Both methods for femoral deformity correction are safe and effective surgical techniques. Based on our results, FAP may be a more accurate technique for deformity correction in the distal femur.

Abstract no.: 26927

**RECONSTRUCTIVE AND RECOVERING SURGERY OF INTERNAL
OSTEOSYNTHESIS FAILURES AND NON-INFECTION COMPLICATIONS**

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Authors analyzed observations of 76 patients with mistakes and complication of internal osteosynthesis. Obtained results allowed classifying them on mistakes in organization, diagnostic and tactic-in-treatment mistakes. Among the mistakes of plate osteosynthesis the tactic-in-treatment mistakes were prevailed - 31 of 36 or 86,1%. Specifically it were implantations of plates designed for another anatomical localization in 6 (19,4%) and incorrect plate length in 5 (16,1%) cases and incorrect plate type in cases of hard osteoporosis 4 (12,9%) and untypical plate site 4 (12,9%) and non-compliance of plate length to fracture type in 5 (16,1%) and finally screw amount non-compliance with quantity of plate holes (screw-insertion-density) in 7 (22,6%) cases. In cases of intramedullary osteosynthesis the mistakes the tactic-in-treatment mistakes were observed in 13 of 16 patients (81,3%). Most frequent of them it was an incorrect choice of nail length and diameter in 4 (30,8%) cases and belated nail dynamization in cases of oblique and short oblique fractures which led to malunions and nonunions in 3 (23,1%) patients and unreasonable nail dynamization in cases of comminuted fractures which led to extremities shortening in 2 (15,4%) patients and neurovascular bundle injury during locking screw insertion in 2 (15,4%) cases. It should be noted mainly for hip and shin fractures intramedullary osteosynthesis and correct operative technique violation resulted to valgus deformation and rotational displacement of peripheral fragment. On certain cases are shown variants of revision surgery, which greatly improved anatomical and functional results.

Abstract no.: 26928

**THE TECHNIQUE OF SURGICAL TREATMENT OF LONG BONE BENIGN
TUMORS AND TUMOR-LIKE DISEASES**

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The method of surgical treatment is proposed for treatment of patients with long bone benign tumors and tumor-like diseases. The offered technique allows to create the optimal conditions for graft rebuilding and to totally restore the segments anatomy and biomechanics and to get a proper functional result.

Abstract no.: 26938

A RETROSPECTIVE STUDY ON INCIDENCE OF CLINICALLY SIGNIFICANT VENOUS THROMBOEMBOLIC EVENTS (VTE) IN PATIENTS WHO UNDERWENT TOTAL KNEE ARTHROPLASTY WITHOUT PRIOR ANTI-COAGULATION

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Objectives: The purpose of the study is to find out the incidence of clinically significant venous thromboembolic events (VTE) in patients who underwent total knee arthroplasty (TKA) without prior anti-coagulation. **Background:** Western guidelines recommend routine chemoprophylaxis for all patients who underwent TKA to reduce incidence of VTE. It is generally assumed that the benefits of routine anticoagulation outweighs its risks. Our study aims to challenge these assumptions, derived largely from Western literature, by illustrating the low incidence of clinical VTE in our Asian population. **Methods:** All patients who underwent TKA from 2006 to 2010 in Singapore General Hospital were reviewed. Patients from a single surgeon were selected. Only symptomatic patients were referred for radiological examination. **Results:** A total of 531 patients were reviewed. Out of this patient group, 3 patients developed symptoms of DVT and duplex ultrasound scan confirmed our clinical findings. These patients were treated promptly and did not develop PE. However 1 patient developed fatal PE without any clinical or radiological evidence of DVT. In the remaining patients, no one developed symptoms of clinical VTE. Hence, incidence of clinically significant VTE based on our study is 0.75%. **Conclusion:** Given the low incidence of clinically significant VTE, there is a need to relook at the practice of routine chemoprophylaxis in patients undergoing TKA. This retrospective study propels the need for more randomized double arm studies to further evaluate the role of chemoprophylaxis in TKA in Asian populations.

Abstract no.: 26939

EFFECTS OF PLATE-EXTENDED AREA AND LOCKING SCREWS ON THE OPEN WEDGE TIBIAL OSTEOTOMY – FINITE-ELEMENT ANALYSIS

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Medial open wedge tibial osteotomy has been used to treat the degenerative knee disease. However, the failure of the tibia-plate-screw construct was reported as one of the major concerns for this surgery. This study postulated that the supporting area of the plate and plate-screw stiffness play the significant role in stabilizing the tibia-plate-screw construct. An anatomically shaped plate was designed to extend the supporting area of a traditional T-shaped plate to support the anteromedial and/or posteromedial region(s) with two distal legs to balance the loads through the opening. Locking screws were used to increase the plate-screw stiffness as comparison with using nonlocking screws. Eight finite-element models (two plate area x four plate-screw stiffness) were created and analyzed. Also the intervention-induced and physiological loads were considered. The results showed that using locking screws at the posteromedial plate can significantly decrease the relative micromotion at the opening. This demonstrated that using locking screws does significantly affect the stress distribution and micromotion of the medial open tibial osteotomy. Compared with the one-leg plate, the two legs form a force-couple mechanism and serve as the effective load transfer due to the greater moment arm. In conclusion, there are two factors to achieve the effective stabilization of the medial opening: The direct contact between the bone and plate at the heavily loaded regions and the sufficient rigidity at the highly stressed plate-screw junctions. Those two factors are highly related to the plate design and the use of locking screws at the posteromedial region.

Abstract no.: 27028

NECK OF FEMUR FRACTURE PATIENT CARE AFTER THE INTRODUCTION OF THE NATIONAL HIP FRACTURE DATABASE (NHFD): 1-YEAR EXPERIENCE

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Introduction: Neck of femur fractures (NOFs) are common injuries with high morbidity and mortality rates. We examined NOF patient care pathway after the UK NHFD was introduced, and assessed whether targets are being met. **Methods:** Retrospective analysis of all consecutive NOF patients at Kingston Hospital between 2009 and 2010. The NHFD was examined and results between the first and second 6 months of the study period were compared. **Results:** There were 372 patients with a median age of 85 years (range 33-101). 28% (104) were male and 72% (268) were female. Median time to surgery was 24.5 hours (1-519.3), with 67.5% (251) <36 hours and 32.5% (121) >36 hours. Delayed surgery was due to lack of theatre space (37.6%) and poor medical fitness (54.7%). Median length of stay was 11 days (1-92) and inpatient mortality rate was 6.2% (23). There were no significant differences between the patients from both study periods. Mean time to surgery (30.6(1-519.3) vs. 41.4(1-281.4) hours, p=0.01 and median length of stay (9.1(2.1-92) vs. 14.1(2-54.1) days, p<0.0001) were significantly shorter in the second period. Mortality rate was lower in the second period (7.4% (14) vs. 5%(9), p=0.17). **Discussion:** The introduction of the NHFD has improved NOF patient care with most patients undergoing surgery <36 hours. Patients had a significantly shorter time to surgery and length of stay in the second study period.

Abstract no.: 27033

TREATMENT OF MALUNION AND NONUNION OF PROXIMAL HUMERAL FRACTURES AT YOUNG PATIENTS

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Aim: To present early results in the treatment of malunion, nonunion and dislocations in the proximal humerus at young patients. Material and method: For a period of 3 years 6 patients with badly healed fractures in the proximal humerus and 2 with nonunion were treated operatively, 3 male and 5 female at the average age of 45 years (22 – 66). Two of them with posterior locking dislocation and fracture, two with anterior locking dislocation and Hill – Sachs defect up to 30% of the head, 2 with malunion, entered for treatment 4 to 15 months after the trauma. In three of the ceases a cavitas glenoidalis defect was found and 2 jatrogenius injury of n. axillaris. Before the operation all the patients had pain, constricted motions and a bad functional result according to Constant score. In 6 of the cases different triplane osteotomy were performed, 6 were plated with angular-fixed plates supplemently with autologius bone graft. Results: A union set in all cases for period of 3 to 6 months. The functional outcome was assessed according to Constant score: 3 excellent, 3 very good and 2 good. Conclusion: The healed in varus and malunion fractures of the proximal humerus and the locking anterior and posterior dislocations with a head defect as well give better final functional results after osteosynthesis with corection osteotomy in comparison with hemiarthroplasty. The attempt for recovery to closer anatomic relation after a full rentgenology and functional diagnostic is advisable at the young patients at active age.

Abstract no.: 27069

COMBINED TOTAL KNEE ARTHROPLASTY AND OPENING WEDGE HIGH TIBIAL OSTEOTOMY

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Total knee arthroplasty (TKA) in patients with severe varus due to constitutional proximal deformity, remains a challenging procedure. Orthogonal cuts result in asymmetric bone resection and subsequent bone related laxity or difficult release. A combined procedure that combines opening high tibial osteotomy and TKA in the same sitting to address such major deformities was performed in ten patients between 2000 and 2005. The two procedures were performed in one sitting, the tibial valgus osteotomy first with opening wedge osteotomy. The bone cut was outward and upward; it remained above the level of the tibial tubercle, and as far away (at least 30 mm) from the lateral joint surface as possible, to leave sufficient bone in the tibial epiphysis. The osteotomy was held open with a bone substitute wedge and a plate to ensure the stability of the construct. Tibial resection was 9 mm thickness. The stem of the tibial component was modular and long enough (65 to 80 mm in our experience), to extend beyond the osteotomy site. The prosthesis had posterior substituting cemented design. Preoperative mean femorotibial varus was 18° (range: 15–25°). Postoperative mean femorotibial varus was 1° (range: -2 to +3°). The overall correction of the malalignment (constitutional varus) was mainly due to the osteotomy of the proximal tibial: 13° (range: 10–19°) of correction with the osteotomy. No release was done during surgery. No instability and no complication were observed. The final flexion was average 130° (range 110° to 140°). Joint space and patella had normal height.

Abstract no.: 27098

**RESTORING THE POSITION OF THE SESAMOID IN SCARF
OSTEOTOMY – A LEARNING CURVE**

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The purpose of this study is to determine whether there is a learning curve in restoring the sesamoid position in scarf osteotomy, with the aim of reducing the recurrence of hallux valgus. This was a retrospective review of 71 consecutive cases of scarf osteotomy over a 2.5 year period. They were divided into 3 groups based on the date of surgery. The first 24 cases were in group 1, next 24 in group 2 and last 23 in group 3. We compared the median sesamoid position of the 3 groups of patients at 6 weeks post- operatively and their satisfaction at 6 months post- operatively. The sesamoid position ranged from 1-7 as proposed by Hardy and Clapman. The median sesamoid position for all our patients improved from 7 pre- operatively to 2 post- operatively. The post- operative sesamoid position was significantly better for the 2nd and 3rd group compared to the first ($p<0.05$). 92% of patients were satisfied with the procedure. We concluded that there is a learning curve to optimally restoring the position of the sesamoid in scarf osteotomy and this has a direct effect towards reducing the risk of recurrence.

Abstract no.: 27110

COMPLICATIONS OF LENGTHENING THEN NAILING IN HEIGHT INCREASE SURGERY

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Objectives: Limb lengthening by Ilizarov technique and external fixation is very effective method of treatment. The long duration of external fixation is associated with discomfort and many complications. Cosmetic limb lengthening can be one of the indications for lengthening then nailing technique. But complications and problems arise during treatment need special attention **Materials and Methods:** This study included 32 patients of cosmetic height increase surgery, managed by lengthening then nailing technique for leg lengthening. **Results:** Average duration of external fixation was 96 days and the average lengthening achieved was 7.6 cm (range 3.5-12 cm). Although there were few complications that affected the final outcome or caused any long term disability, but obstacles, problems, patient discomfort, and psychological stress during lengthening were very important issues in this special type of patients. **Conclusion:** The technique described needs attention to many small details during and after surgery to avoid complications and to achieve the required goal. The complications encountered in this study gave no residual squally, but they need to be explained in details to patients looking for cosmetic lengthening, to make sure that the patient and the treating doctor have the same expectations.

Abstract no.: 27122

**PELVIC SUPPORT OSTEOTOMY BY ILIZAROV METHOD:
AN ALTERNATIVE TO HIP ARTHROPLASTY IN DEVELOPING
COUNTRIES – INDIAN EXPERIENCE WITH 35 CASES**

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In developing countries like India many patients are from rural areas who cannot afford to undergo hip arthroplasty because of economical constraints and also because of limitations of hip arthroplasty like inability to squat and sit cross legged which is required utmost to carry out activities of daily living in Indian rural population. Material and methods: We studied 35 cases of various pathologies like old infantile septic arthritis,secondary OA,old healed perthes from 2003-2009.Age range of patients was 19 to 55 years. Pre-operative harris hip score on an average was 43.7.Pre operative planning was done by paper diagram in which valgus required to negate trendelenburg lurch and varus required at distal femur in the lengthening zone was calculated. Ilizarov construct was applied after ostetotomies. Lengthening at distal femur osteotomy site was done to correct shortening and angular correction was done subsequently. Results and complications: Mean post-operative harris hip score improved to 78.9.4 patients had minimal trendelenburg lurch.2 patients developed moderate knee stiffness.7 patients had minimal decrease in hip flexion.33 patients were able to squat and sit cross legged.5 patients developed superficial pin tract infection. Conclusion: Pelvic support osteotomy is an excellent and economical alternative in Indian rural hip problems.It allows patient to squat, sit cross legged which is an important requirement in Indian rural society to carry out the activities of daily living which cannot be carried out safely after total hip replacement.

Abstract no.: 27142

**INSUFFICIENCY FEMORAL INTERTROCHANTERIC FRACTURES
ASSOCIATED WITH GREATER TROCHANTERIC AVULSION
FRACTURES**

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(Introduction) Insufficiency fractures are often overlooked, particularly when associated with greater trochanteric avulsion fractures. Here we report MRI findings of insufficiency femoral intertrochanteric fractures associated with greater trochanteric avulsion fractures treated by internal fixation. (Materials and Methods) We identified 8 patients (3 men and 5 women; age range, 58□92 years old). All cases used internal fixation devices. Operations were performed within 30 minutes with a total recorded blood loss within 50 ml. We studied MRI findings, hospital stay (number of days), the ambulatory status at hospital discharge, and complications. (Results)We were able to identify intertrochanteric fractures using MRI which we could not identify with radiographs. The average hospital stay was 28 days. Seven patients could walk with support and 1 patient could walk without support. There were no complications regarding the operation itself. (Discussion and Conclusion) Insufficiency femoral intertrochanteric fractures associated with greater trochanteric avulsion fractures were often overlooked. We successfully treated these fractures by internal fixation.

Abstract no.: 27144

MANAGEMENT OF CONGENITAL TALIPES EQUINUS VARUS BY ILIZAROV METHOD: A STUDY OF 28 CASES

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Congenital talipes equinus varus {ctev} is the most studied problem in paediatric orthopaedics. Still ctev treatment by ilizarov method is unexplored. Material and methods: 28 cases of ctev from age range 3 to 45 years with a follow-up of 2-10 years were studied. 13 cases had neglected type of ctev. 6 had relapse. 3 had recurrent ctev. 6 had rigid ctev. Pre -operatively ilizarov ring size was calculated and the assembly required for the construct was kept ready along with paper planning of the construct. 2 surgical strategies were used 1}soft tissue distraction by ilizarov 2}osteotomy distraction by ilizarov for different age group of patients. Results were assessed by international foot society score. In soft tissue distraction group results were excellent in 5, good in 7, fair in 4 and poor in 2 cases. In osteotomy distraction group results were excellent in 4,good in 4,fair in 1,poor in 1 case. Complications: curling of toes was seen in 6 cases, superficial pin tract infection was seen in 5 cases, physeal separation was seen in 1 case, recurrence was seen in 1 case and articular subluxation was seen in 1 case. Conclusion: Ilizarov method is the key for treating difficult and complex club foot. We recommend soft tissue distraction with ilizarov with/without soft tissue release in patients <12 years and osteotomy distraction by ilizarov in patients >12 years. Ilizarov method for ctev remains unexplored and has unbounding possibilities for its implications.

Abstract no.: 27149

PUNCTURE DESTRUCTION OF TUMORS AND PATHOLOGICALLY CHANGED TISSUES BY ELECTROMAGNETIC RADIATION OF SUPERHIGH-FREQUENCY RANGE (SHF)

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Treatment of tumours by electromagnetic radiation of superhigh-frequency range is a high-performance and safe technique. On the frequencies in this range to the thermal mechanism of tumorous tissue destruction a specific mechanism provided with rotation of polar molecules (proteins and amino acids) is added. The radiator of SHF - waves made in the form of acicular antenna probe (coaxial monopole-vibrator) allows carrying out puncture minimal invasive approach to tumours or their metastases.

Abstract no.: 27167

MANAGEMENT OF FIBULAR HEMIMELIA – A CASE SERIES OF 29 PATIENTS

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Fibular hemimelia is not only a fibular anomaly but involves entire limb with varied expression in each segment. Material and methods: 29 patients with age range from 6months to 16 years and follow up mean of 4.2 years were studied retrospectively. All patients were studied radiologically and classified according to paleys classification. Patients were treated according to their presentation with varied treatment protocols like soft tissue release, corrective osteotomies, lengthening by ilizarov method or combination of above to obtain a plantigrade, functional foot with equal limb lengths. Tibial lengthening by ilizarov method was performed in 9 patients, soft tissue release was done in 7, soft tissue release and bony correction was done in 8, adolescent correction in 3 and amputation was done in 2 patients. Results and complications: We got excellent results in 11 patients, good in 16 and poor in 3 patients. Desired lengthening was achieved in 18 patients. Plantigrade foot was obtained in 21 patients. We had recurrence of foot deformities in 8 patients. Knee valgus in 3, FFD at knee in 4 patients, subluxation knee in 1 patient. Superficial pin tract infection was seen in 7 patients. Conclusion: Fibular hemimelia management requires early and radical surgery, foot osteotomies should be done as warranted. Complications should be anticipated and informed to parents and early appropriate measures should be taken. Recommendations: Foot correction should be done with or before first lengthening. Staged serial lengthenings should be done as required. Ankle arthrodesis should be done as per requirement.

Abstract no.: 27175

**SOLITARY EXOSTOSIS AT THE FLOOR OF THE ACETABULUM
TREATED BY SURGICAL DISLOCATION OF THE HIP, CASE REPORT**

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In this report we describe a case of a male child 8 years old who was complaining of persistent pain and limitation of movement in the left hip, imaging of the hip showed a bony mass occupying the floor of the acetabulum with lateral subluxation of the head of the femur, this mass was removed from the floor of the acetabulum using the surgical dislocation technique of the hip described by Ganz (2001), and the head of the femur was relocated inside the acetabulum and the child was put in a hip spica for 3 weeks. Histopathological examination of the removed bony mass proved to be osteochondroma. After 6 month of follow up the child was normal as regard pain and range of hip movement and plain x-ray revealed concentric location of the head of the femur inside the acetabulum without any sign of avascular necrosis of the head of the femur.

Abstract no.: 27188

**BIOMECHANICAL ANALYSIS OF THE REQUIRED ABDUCTOR FORCE
AFTER TOTAL HIP ARTHROPLASTY**

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Abductor forces after total hip arthroplasty (THA) have so far been measured in-vitro and in-vivo on smaller groups of patients, yet no method has been presented that would enable non-invasive estimation of pre- and post-operative abductor forces in larger patient groups. In our paper we used a mathematical HIPSTRESS model to calculate the change of the required abductor force after THA. The model is based on a static biomechanical analysis of one-legged stance and measurements of pelvic radiographic parameters. Two groups of THA patients were compared retrospectively, 57 patients with Zweymüller (Endoprothetic Plus) versus 30 patients with ProfemurZ (Wright), operated upon by a single surgeon between 2005 and 2009. In all cases, but more with Zweymüller, the required abductor force was reduced after THA. In both groups the greater trochanter was on average displaced medially and distally in comparison to its preoperative position, the change was less pronounced with Zweymüller. The sheer force postoperatively increased in both groups, more with ProfemurZ. Following THA with Zweymüller the operated leg was elongated less in comparison to ProfemurZ. We conclude THA generally lowers the required abductor force. The exact magnitude of change depends on the preoperative pelvic geometry and intraoperative changes in the center of rotation and trochanteric position. Our pilot study indicates better biomechanical outcomes with the cementless femoral stem type Zweymüller in comparison to ProfemurZ; further evaluation will show whether these correlate with mid-term clinical results and endoprosthesis survival.

Abstract no.: 27198

RADIOGRAPHIC STUDY OF THE HIP JOINT TO DETERMINE ANTHROPOMETRIC PARAMETERS FOR INDIAN POPULATION

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Hip replacement surgeries are on the rise in India. However, for these surgeries, most of the implants used are imported and manufactured entirely to suit the geometrical considerations of the western population. Studies in the past have shown that there are anatomical variations in the hip joint for different ethnic backgrounds and geographical locations. There is paucity of anthropometric hip joint data related to Indian population and anthropometric variations in skeletal geometry between Asian and Western counterparts have not yet been thoroughly reviewed and considered for implant manufacturing. The purpose of this anthropometric study is to determine any anatomical variations in the normal hip joint among the Indian population and to statistically compare the mean values with the existing data on western population. 422 Hip radiographs of 211 individuals) with normal and healthy hip joints were evaluated to obtain the horizontal offset, vertical offset and neck shaft angle. For males, Mean Neck Shaft Angle (NSA) was 127.68° (S.D=3.94), Horizontal Offset was 34.60 mm (S.D=6.55) and Vertical Offset was 39.17mm (S.D= 5.86). For Females, Mean NSA was 125.92° (S.D =4.75), Horizontal Offset was 32.96 mm (S.D = 7.04) and Vertical Offset was 36.38 mm (S.D = 6.28). When these parameters were compared to the data available from western world, there were significant anatomical variations and it was evident that there is a need to evaluate existing implants in relation to this data.

Abstract no.: 27201

INTERTROCHANTERIC VALGUS OSTEOTOMY {USING ANATOMICAL AND MECHANICAL AXIS METHOD} AND FIXATION WITH SLIDING HIP SCREW AND PLATE FOR FRACTURE NECK FEMUR – DOES IT WORK?

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We present a prospective study of 36 cases of fracture{#} neck femur from 2003-2009, which included 30 fresh neck femur # cases, 5 cases of non-union with implant in situ & 1 case of malunion with age range from 17 to 60 years with 24 males & 12 females. The duration of follow-up ranged from 10 months to 4 years. Pauwels angle was calculated using mechanical & anatomical axis on a-p x-ray. Paper planning to calculate amount of wedge to be removed & surgical planning was done in all cases. Our aim was to convert pre-operative pauwels angle to 30* which would by itself convert shearing forces into compressive forces. By performing osteotomy at the level of lesser trochanter and fixation with sliding hip screw {shs} & plate more stability {especially rotational} could be obtained and also the distal fragment could be lateralised which would avoid future knee arthritis problem. Patients were kept non weight bearing for 6 weeks & then toe touch weight bearing was started. Patients were called for follow-up at 6 weeks, 3months, 6months, 1 year. Results and complications: # union rate was 90%. Mean post-operative neck shaft angle was 140*. Avn was seen in 3 cases. 1 patient died due to uncontrolled diabetes. Some limp was noted in all cases. Harris hip score improved significantly in all cases. Superficial infection was seen in 2 cases which did not require implant removal. Sliding screw cut through was seen in 1 case. Conclusion: Intertrochanteric valgus osteotomy is an effective head preserving surgery for # neck femur cases.

Abstract no.: 27247

A NOVEL TECHNIQUE OF CERCLAGE WIRING USING A POWER TOOL

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Purpose: Cerclage wiring is used widely in orthopaedic surgery to compress and secure bony or soft tissue elements. It can be used primarily or as an augment to other techniques. By convention, tightening of cerclage wires is done manually using wire gripping devices such as pliers, wire holding forceps, cerclage twisters etc. These methods can be slow, cumbersome and also be subjected to operator fatigue. Commercially available powered wire twisters can be expensive and not so easily available in the emergency operative setting. We describe a novel way of tightening cerclage wires using a power tool, and propose this as an efficient, simple, inexpensive and readily available alternative to the usual manual technique. Methodology: Using very basic surgical tools such as a Luque wire, wire passer and a standard power tool, we describe a method of cerclage wiring that not only fulfils its objective of holding-cum-tightening, but is also more efficient, and produces a more even intertwining of wires as compared to the traditional manual technique. In our poster/oral presentation we will show a series of intra-operative photographs to describe our surgical technique. Results: Post-operative radiographs will also be presented to show the end result of this technique. Our method fulfilled its primary objective of tightening across a fracture site in a more efficient and consistent manner, producing a more even intertwining of the wires. Conclusion: We recommend this technique as it is simple, readily available, inexpensive, and effective. It also produces a more even intertwining of cerclage wires.

Abstract no.: 27248

DISTAL RADIUS FRACTURES: AN EPIDEMIOLOGICAL REVIEW

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Purpose: Distal radius fractures are among the most common fractures encountered in clinical practice. However, there is little epidemiological data available. Our study aims to fill this knowledge gap. **Methodology:** Included in this study were all adult patients aged 16 and above with distal radius fractures seen between Nov 2008 and May 2009. Patient case records were reviewed retrospectively. Information captured included patient biodata, AO classification of fractures, mechanism of injury, associated injuries and treatment modalities. **Results:** We reviewed 419 patients with 431 fractures. These fractures occur at all ages, peaking at 50 to 60 years, in contrast to the popularly believed bimodal distribution. The peak incidence of distal radius fractures in females occurred in the perimenopausal age group, whereas the incidence for males peaked between age 30 to 50. This could be a reflection of post-menopausal osteoporosis and work-related injuries. 53% of fractures were extra-articular - type A by AO's classification. 13% were partial articular (type B) and 32% were complete articular (type C). The mechanism of injury correlated well with AO's classification. Older patients were more likely to be treated conservatively. AO severity classification itself also correlated well with the clinician's decision to surgically fix the fracture. There is a high incidence of associated ulnar styloid fractures. Other associated non-ulnar styloid bony injuries include fractures of the scaphoid, metacarpal, and phalanges. **Conclusion:** Data gathered in this study can be a platform for future prospective studies correlating epidemiological data with management outcomes.

Abstract no.: 27249

TOTAL HIP ARTHROPLASTY USING S-ROM PROSTHESIS FOR DYSPLASTIC HIP

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Background: The purpose of this study was to evaluate the clinical and radiological results of total hip arthroplasty using a proximal modular femoral stem in patients who had secondary coxarthrosis associated with a dysplastic hip. **Methods:** Forty-two patients (45 hips) with secondary coxarthrosis were evaluated after undergoing primary total hip arthroplasty using a S-ROM proximal modular femoral stem. The average follow-up was 80 months (range, 60 to 96 months). Clinical and radiological assessments were performed based on the Harris hip score and the radiological change around the prosthesis. **Results:** The average Harris hip score improved from 52.2 points to 88.5 points. All the femoral stems showed stable fixation; there were 37 cases by bony ingrowth and 8 cases by stable fibrous ingrowth. Neither osteolysis nor progressive radiolucent lines around the femoral stem were found at the latest follow-up. Forty one hips (91.9%) revealed excellent or good clinical results at the most recent follow-up. **Conclusions:** For the advanced secondary coxarthrosis, total hip arthroplasty with the use of the proximal modular femoral stem yielded good mid-term results with respect to the clinical and radiological criteria.

Abstract no.: 27257

NEGATIVE PRESSURE WOUND THERAPY: A REVIEW OF 100 CASES

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Negative pressure wound therapy {NPWT} is an upcoming treatment form for the difficult wound problems in orthopaedics. We present to you a case series of 100 patients from august 2007-october 2010 with age range from 21-67 yrs with wounds due to compound fracture ,infected non union, fasciotomy, amputation in diabetics, post operative infection. Average follow-up was 8months.All patients were treated with debridement + NPWT with/without any additional treatment pertaining to the problem dealt. NPWT was applied with the help of an indigenously developed machine which is computerised. It controls vaccum pressure and has in-built timer and alarm. It can be programmed to intermittent mode. NPWT dressing was changed every 3-5 days with/without anaesthesia as per requirement. Definitive closure of wound {either by skin graft or flap according to wound status} was found to be done much earlier than the conventional dressing methods as per our previous experiences dealing with similar kind of problem. Results were seen in as early as 3 days. All the wounds healed after definitive coverage within time range from 2 weeks to 2 months. Nearly all patients were satisfied with the cosmesis of the limb. Complications such as skin sodding, overgrowth of granulation tissue, persistent pain was observed in few patients. Conclusion: NPWT though in neophytic stage seems to be the gold standard while dealing with difficult orthopaedic wound problems due to its vast array of advantages but more long term follow-up studies are required to come to a rigid conclusion.

Abstract no.: 27300

LONG-TERM RESULTS OF THE RECONSTRUCTION USING THE LEEDS-KEIO ARTIFICIAL LIGAMENT FOR SPONTANEOUS SIMULTANEOUS BILATERAL QUADRICEPS TENDON RUPTURE IN HEMODIALYSIS PATIENTS

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Spontaneous simultaneous bilateral quadriceps tendon rupture is a rare injury seen in hemodialysis patients. Because of the declining prognosis in these patients, no available reports have been published concerning the long-term results of the repair or reconstruction surgery of these tendon disruptions. We describe the long-term results of the reconstruction of the ruptured bilateral quadriceps tendon with the Leeds-Keio artificial ligament in hemodialysis patients. This procedure was performed on 6 knees in 3 patients (male2, female1). Their average age was 41.7 (35-45) years. The average duration of hemodialysis before injury was 14.9 (12.3-16.3) years. We performed this augmentation procedure because this rupture seemed caused mainly by the weakness of the link between quadriceps tendon and patella due to long-term hemodialysis. The advantages of this procedure are that postoperative immobilization does not required and rehabilitation is much quicker than other procedures described previously. At the final follow-up (average 13.5 years after the surgery), all patients could walk independently with or without a cane. There were no cases of infection, joint effusion or rerupture of the tendons. The average of Japanese Orthopaedic Association score and Lysholm score were 93 (85-100) and 94 (82-100) points, respectively. The average range of motion was 132 (115-160)^o with no extension lag. Thus, those patients have maintained good knee functions as well as excellent clinical results. We therefore conclude that this procedure using the Leeds-Keio artificial ligament offers a good option for the management of this difficult problem in hemodialysis patients.

Abstract no.: 27334

SERUM METAL ION LEVELS AFTER ROTATING HINGE KNEE ARTHROPLASTY

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Introduction: The serum concentrations of cobalt (Co), chromium (Cr) and molybdenum (Mo) were determined following rotating hinge knee arthroplasty. **Materials & Methods:** Blood was taken from 25 patients treated with megaprostheses (n=17) or standard rotating hinge devices (n=8). The mean follow-up was 35 months (range, 9-67 months) and all ion analyses were carried out using an electrothermal graphite furnace atomic absorption spectrometer (ET ASS) in the same laboratory. **Results:** The mean results for Co, Cr and Mo were 0,52 µg/dl (range, 0-4,70 µg/dl), 0,213 µg/dl (range, 0,06-2,49 µg/dl) and 0,05 µg/dl (range, 0-0,08 µg/dl). While the results for Mo (normal: 0-0,10 µg/dl) were within normal ranges, the values for Co (normal: 0-0,05 µg/dl) and Cr (normal: 0-0,19 µg/dl) were elevated. The results for Co and Cr from patients with megaprostheses were significant higher compared to standard rotating hinge knees (Co: p=0,024, Cr: p=0,025). **Discussion:** Determining the concentrations of metal ions following rotating hinge knee arthroplasty revealed increments for Co and Cr but not for Mo. The metal ion release was significant higher in patients with megaprostheses compared to a standard rotating hinge knee device. The authors believe that there might be an additional metal ion release from the prosthesis' surface and not only from the articulating surfaces because in cases of rotating hinge knee prosthesis there is a metal-on-polyethylene articulation and not a direct metal-on-metal junction.

Abstract no.: 27335

IN VIVO TESTING OF KNEE STABILITY AFTER ROTATING HINGE KNEE ARTHROPLASTY: A COMPARISON OF TWO KNEE SYSTEMS

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Introduction: Rotating hinge prostheses are used for reconstruction of the knee. The aim of the study was to examine the in vivo stability of two rotating hinge devices.

Materials & Methods: Between 2003 and 2008, 55 reconstructions of the knee were performed using the LPS/M.B.T. and S-ROM Noiles knee systems. Overall, 25 patients underwent the clinical examination. Implant's stability against varus and valgus stress during flexion and extension was tested with ultrasound. Distraction of the central rotational stem was measured in x-rays and three rating systems (KSS, WOMAC and MSTS) were used to evaluate functional outcome.

Results: The measured medial and lateral lift-off distances in flexion and extension were almost similar for both devices.

As well, mean distraction of the central rotational stem of the S-ROM Noiles device was not significant higher compared to the LPS/M.B.T. system. The differences of the scoring systems were not significant either.

Discussion: The study revealed that a stable reconstruction could be achieved with both tested rotating hinge devices with good functional outcome. Differences between the implants were not significant.

The results for medial and lateral lift-off during flexion and extension in ultrasonography were comparable while the measured distraction of the LPS/M.B.T. device was lower compared to the S-ROM Noiles rotating hinge implant.

Conclusion: The implant and the remaining soft tissues have to maintain joint stability.

Soft tissue reconstruction seems to prevent distraction but it does not influence implant's stability against lateral directed forces.

Abstract no.: 27341

EFFECTS OF FEMORAL COMPONENT ROTATION OF TOTAL KNEE ARTHROPLASTY ON MEDIAL SOFT TISSUE RELEASE AND LIGAMENT BALANCE

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We investigated the effects of femoral component rotation on medial soft-tissue release during surgery and ligament balance in both near extension and flexion after surgery. We prospectively collected data on the extent of medial soft-tissue release during cruciate-ligament-retaining total knee arthroplasty with the measured resection technique in 83 consecutive knees (73 patients) with varus deformity. One year after surgery, we evaluated knee range of motion and Hospital for Special Surgery scores. We also evaluated both femoral component rotation and flexion gap balance, using modified axial radiographs. Varus-valgus laxity in 15° flexion was assessed by stress radiographs using a Telos arthrometer (Fa Telos, Germany). The knees were divided into two groups according to type of rotational alignment of the femoral component; clinical outcomes, the extent of medial release, and ligament balance were compared between groups. The internal rotation group in which the condylar twist angle was >3° had undergone a more extensive medial release than the neutral rotation group in which it was ≤3°; nevertheless, lateral joint opening in the flexion gap was seen in the former group. Clinical outcomes were not significantly different between groups. Nine of 68 knees in former group and 8 of 25 knees in later group are unbalanced knee in which difference in varus to valgus motion was >3°, also not significantly different. Femoral component rotation parallel to the clinical epicondylar axis can avoid the excessive medial release and is helpful in achieving an appropriate ligament balance, especially flexion gap balance.

Abstract no.: 27354

**RECURRENT EPITHELIOID SARCOMA IN THE THORACIC SPINE
SUCCESSFULLY TREATED WITH MULTILEVEL TOTAL EN BLOC
SPONDYLECTOMY**

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Epithelioid sarcoma (ES) is a rare type of soft tissue tumor. The common location of ES is at the extremities and rarely occurs in axial skeleton. Only 2 cases have been reported so far. Initial wide resection is recommended for the treatment of ES. However, the local recurrent rate is high and repeat surgical resection is still an option for the treatment of the recurrent. In the spine, however the proper treatment of recurrent ES has not yet been published. Therefore, the objective of this case report is to illustrate the management strategies for the local recurrent ES after initial surgical resection in the thoracic spine. A 14-year-old boy was diagnosed of ES in the thoracic spine for 2 years. He was first treated by surgical resection followed by the chemotherapy and radiotherapy but the disease had progressed and the spine was gradually deformed. He was admitted to our facility with a large soft tissue mass, severe kyphotic deformity and neurological deficit. We removed the tumor en-bloc by one-stage posterior only approach. The posterior transpedicular spinal instrumentation and fibular strut graft were used for the reconstruction. On the last follow-up, two year after the surgery, the patient remained in the good condition. In conclusion, the recurrent ES of the spine can has still archive the good oncological outcome with repeat radical resection, but the initial radical resection remains the best treatment option in order to retard the relentless course of this kind of malignancy.

Abstract no.: 27356

BILATERAL QUADRICEPS TENDON RUPTURE IN A HEALTHY SEASONED MARATHON RUNNER: A CASE REPORT

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Steiner and Plamer described the first bilateral quadriceps tendon rupture in 1949 and since then there have been about 100 cases published in the English literature. Simultaneous quadriceps tendon ruptures is a rare event in previously healthy individuals with limited reports in the English literature. The three cardinal features of this pathology, as reported by MacEachern in 1984, are bilateral diffuse swellings around the knees, palpable suprapatellar gaps and inability to lift the extended legs, in the presence of normal functioning lower limb muscle groups. We present the case of a 63-year-old healthy seasoned marathon runner who sustained bilateral quadriceps tendon rupture following an innocuous low-energy fall. He presented at an Accident & Emergency department unable to weight-bear and discharged home undiagnosed. He remained bedbound for six weeks leading to a subsequent visit to the hospital and the correct diagnosis, followed by tendon repair using the tunnel technique. Our case report presentation is unique in that the patient lies outside the broad categories of observed bilateral quadriceps tendon ruptures and also serves to highlight the importance of clinical examination and maintaining a high index of clinical suspicion in patients of all ages, especially when no other co-morbidities are present.

Abstract no.: 27369

ELASTOFIBROMA DORSI: DIAGNOSTIC AND THERAPEUTIC ALGORITHM

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Elastofibroma is an uncommon, benign, slow-growing lesion of uncertain etiology. It typically occurs in the subscapular region of elderly individuals and has a high incidence in Kyushu and the surrounding islands, southern Japan. We report a series of 11 patients with elastofibroma dorsi and present our own algorithm for diagnosis and treatment of this lesion. There were six males and five females, with a mean age of 67 years (range, 49-82 years). Bilateral lesions were found in two patients. All were diagnosed by magnetic resonance imaging (MRI) and early in the series one also underwent open biopsy to confirm the diagnosis. Surgery was performed on five patients at the patient's request. One patient developed a postoperative seroma requiring needle aspiration. Our findings indicate that MRI can be used as a first-line investigation of the lesion and biopsy is not necessary in most cases. We suggest that a conservative "wait and watch" attitude is reasonable and may be considered even when patients are symptomatic.

Abstract no.: 27370

AN INJECTABLE COMPOSITE MATERIAL CONTAINING BONE MORPHOGENETIC PROTEIN-2 SHORTENS THE PERIOD OF DISTRACTION OSTEOREGENESIS IN VIVO

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To investigate new methods that can decrease the duration of bone transport distraction osteogenesis, we injected composite materials containing recombinant human bone morphogenetic protein-2 (BMP-2) and induced the generation of a callus bridge by rapid segmental transport (4 mm/day) in a rabbit bone defect model. The composite materials consisted of BMP-2 (0, 30, or 100 µg), β-tricalcium phosphate powder (βTCP, 100 mg/animal; particle size, <100 µm), and polyethylene glycol (PEG; 40 mg/animal). A paste of equivalent composition was percutaneously injected at the lengthening and the docking sites after surgery and after bone transport, respectively. The radiographic, mechanical, and histological examinations at 12 week postoperative revealed that the generation of bridging callus in the presence and in the absence of BMP-2 was significantly different. The callus mass in the bone defect region was adequately and consistently developed in the presence of 100 µg of BMP (administered for 6 weeks), and the bones were consolidated in 12 weeks. Such an adequate callus formation was not observed in the control animals without BMP-2 treatment. The result of this experimental study suggests the potential application of BMP-2 in accelerating callus formation and in enabling rapid bone transporting, thereby shortening the treatment period for the repair of diaphyseal bone defects by distraction osteogenesis.

Abstract no.: 27378

OUTCOMES AND COMPLICATIONS OF TITANIUM ELASTIC NAILING IN PEDIATRIC FEMUR FRACTURES

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Objective: The purpose of the study was to assess the functional outcome and complications associated with treatment of pediatric femur fractures with Titanium Elastic Nails. **Methods:** 20 consecutive femur fractures in children 5-15 years of age were recruited prospectively over 13 months. **Results:** Fracture union occurred at a median 6 weeks. Major complications were present in two patients. There was no soft-tissue irritation due to nails. Children less than 10 years had higher risk of limb lengthening ($p=0.012$). Leaving the outer portion of the nail shorter resulted in better knee range of motion and earlier achievement of functional knee motion. Leaving the nail end lie unbent on the metaphyseal flare reduced eliminated the incidence of skin irritation. Both major complications occurred in patients with substandard nail:canal and weight:nail ratio. **Conclusion:** Though titanium elastic nailing is easy to perform and is minimally invasive, strictly adherence to the principles of the procedure is mandatory. Understanding the complications and ways to avoid them will help the orthopedic surgeon achieve excellent results.

Abstract no.: 27385

GIANT CELL TUMOURS – ARE THERE PREDICTOR PARAMETERS?

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OBJECTIVES: The aim of the study is to investigate if there are any perioperative risk factors that increase the risk of recurrence of giant cell tumours (GCT) after surgery.

MATERIALS AND METHODS: All patients with a giant cell tumour who were operated on from 1990 to 2008 were retrospectively identified. Patients without follow-up were excluded. Case notes, operative notes, X-rays and histopathology reports were extensively reviewed. Patient demographics, clinical presentation, tumour factors (primary or recurrent tumour at presentation, tumour location, radiologic grade and stage), treatment modalities, type of reconstruction, limb preservation, complications and recurrence were noted. Radiologic grading devised by Campanacci and the Enneking staging system for benign musculoskeletal tumours was used in this study for comparison between patients. **RESULTS:** The study comprised 63 patients. Mean follow-up was 49.4 months. Recurrence rate of the tumour at 2 years was 20.6% and overall recurrence was 36.5%. Age of 25 or under ($p=0.025$) and proximal tibia tumours ($p=0.016$) had an increased risk of recurrence. There was no increased risk of recurrence of the tumour with gender, race, pathological fracture or cortical breaks on initial presentation or other tumour factors. There were 3 cases of malignant conversion (4.8%). **CONCLUSION:** Giant cell tumours in patients 25 years or younger and those of the proximal tibia have a higher recurrence rate. Further studies are required to investigate this phenomenon and treatment strategies may need to be evaluated to decrease recurrence in these patients.

Abstract no.: 27387

MEASUREMENT OF NERVE PRESSURE DIFFERENCES IN HEALTHY HUMAN VOLUNTEERS BETWEEN TWO TOURNIQUET SYSTEMS

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BACKGROUND: Nerve injury is one of the most serious complications associated with the clinical use of tourniquets. Encouraged by actual discussion in the literature we examined the risk, and assessment of nerve detracting on the upper extremity. **MATERIAL & METHODS:** In a prospective single-center randomized, open study involving two subgroups, we investigated the safety and practicability of two common devices in healthy human study subjects on the upper non-dominant limb. We examined possible influence on the median nerve using the pressure specified sensory device and enquired differences between both groups to perceive pain on the upper extremity. **RESULTS:** The silicon ring device showed to have caused significantly more pain than the broad pneumatic tourniquet but results related to influencing the nerve function were equal in both groups. Practicability was superior with the silicon ring device. No pressure signs on the skin, redness or nerve damage occurred in both groups. **CONCLUSION:** Both devices tested in the present study are save and no patient related complications where observed. When a tourniquet is indicated, the chosen device should be most suitable to avoid pain and nerve damage for the patient and should provide a secure and easy to handle device for the surgeon.

Abstract no.: 27395

RECONSTRUCTION OF FEMORAL NECK IN CHILDREN (CASE REPORT)

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Background: non union of femoral neck in children is rare (7%), the management is valgus osteotomy and vascularize bone graft. Material and method: We visited a child with history of 9 months femoral neck fracture with non-union. He treated by open reduction and fixation with 2 pin, 1 screw and spica cast. After general anesthesia we incised capsule through posterior approach; the neck was completely absorbed. We reconstruct posterior and anterior wall with pedicle muscular graft of quadrates femures ($5 \times 2 \times 0.5$) and cortical iliac graft respectively and fixed with 2 screw, 2 pin and spica cast. Result: after 4 months the spica cast was removed, range of motion and weight bearing started and after 9 months union occurred radiography and clinically full with range of motion and no limb length discrepancy. Conclusion: muscular quadriceps femuris and cortical iliac graft can be a good candidate for femoral neck defect nonunion in children.

Abstract no.: 27412

TWO PART HUMERUS HEAD FRACTURES TREATED WITH EXTERNAL FIXATION

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INTRODUCTION: Proximal humerus fractures are relatively frequent. There are several treatment options of proximal humerus fractures: close reduction and fixation with percutaneous pinning or intramedullary rod, open reduction and internal fixation with tension band or a plate. The external fixation is an alternative method achieving fast and easy stabilization of the fracture. **AIM:** To demonstrate an alternative choice of minimal invasive treatment in cases of two parts humerus head fractures. **MATERIAL AND METHODS:** 5 patients were enrolled in the study, of mean age 37 years, 1 man and 4 women. The mean follow-up was 1,5 years. Intra and post-operative complications were studied. Physical examination, anteroposterior and lateral plain X-rays were performed pre and post operatively. The functional outcome was measured with the Dash score. **RESULT:** We didn't observe in our study any intra-operative or post-operative complication such as damaging the adjacent neuro-vascular structures or tendons, loosening reduction, pins migrations, aseptic necrosis of humeral head and pins infection. We had one case of shoulder stiffness in an elderly patient, which the range of motion returned back to normal after rehabilitation. **CONCLUSION:** Close reduction and external fixation have theoretical advantages over open techniques. It is an easy technique, with good overall results, avoiding large incisions to the shoulder which can lead to aseptic necrosis of the humeral head. Its application depends upon the number of fragments displaced, reducibility, bone quality, patient age, other pathology associated. It is considered to be ideal in young patients with two-part humerus head fractures.

Abstract no.: 27413

SINGLE INTERNAL FISTULAE COMMUNICATING TO HIP AND PELVIC STRUCTURES IS A SERIOUS AND POSSIBLY FATAL CONDITION: A CASE REPORT

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INTRODUCTION: A fistula between the colon and the extra abdominal structures such as the hip or the lower extremities it is serious and possibly fatal because of progressive deterioration of their medical condition despite appropriate surgical management.

MATERIAL AND METHOD: Patient was admitted because of low back pain associated with pyrexia. The patient underwent hysterectomy 30 years ago and hemiarthroplasty for femoral neck fracture 1 year ago. Her ESR was 30 and her lucocyte count 12.000 10³ /µL.

Superficial crepitant sensation resembling surgical emphysema on her right knee.

RESULT: Surgical debridement was done. The culture of the pus showed E.Coli and enterococcus infection. The patient's medical condition progressively deteriorated. On the next day sustain a new surgical debridement just above the knee and extending about 25 cm long was performed. A large abscess was found under the facia lada with large amount of pus. The patient's general condition recovered. A new surgical debritement two days later the incision was extended cephalad and posteriorly. When the incision reached the hip area, pus, fecal material and gas was noted coming out from the greater sciatic foramen. Sigmoidostomia was performed after diagnosis of perforation of the rectum. 25 days later the wound was almost healed but unfortunately the patient died of cardiorespiratory shock caused by cardiac attack.

CONCLUSION: Proper examination and prompt recognition of such conditions of the colon should be done to exclude a connection between the colon and the infected aria.

Abstract no.: 27428

SUPRACONDYLAR FEMORAL FRACTURE AFTER TOTAL KNEE ARTHROPLASTY IN ELDERLY CASES

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PURPOSE: The purpose of this paper is to evaluate the effectiveness of intramedullary supracondylar (IMSC) nail utilized in the supracondylar femoral fracture following total knee arthroplasty (TKA) in elderly age patients. **PATIENTS AND METHODS:** A total of 3 supracondylar femoral fracture patients with TKA history were operated with IMSC nail. The average age at the time of the fracture was 84.6. The fracture occurred on average 4 years after TKA. We investigated the patients' pre and postoperative ambulatory status and the duration till femoral fusion after the surgery. **RESULTS:** A total of 2 patients who were ambulatory before fracture maintained ambulate status with or without T-cane after surgery. The remaining one case was a 91 years old and had no ambulatory status before surgery. The average duration till fusion was 9 weeks. **DISCUSSION:** When IMSC nail is selected, intercondylar distance of the femoral component, and the location of the fracture site should be investigated preoperatively. Often, knee after IMSC nail fixation tends to hyper-extend slightly and minimally invasive plate osteosynthesis (MIPO) could be performed to reduce this postoperative deformity. In cases with wide knee range of motion (ROM), MIPO is considered first choice to maintain the postoperative ROM. In this series, all patients did not have active ambulate status and wide knee ROM. Thus, IMSC nails were preferred for its simplicity. Various factors such as patient's preoperative activity, fracture type, and implant design should be carefully evaluated preoperatively case by case for optimum treatment.

Abstract no.: 27439

NECROTIZING FASCIITIS IN PATIENT WITH UNSTABLE PELVIC FRACTURE, FOURNIER GANGRENE AND BILATERAL PELVIC EXTREMITIES COMPARTMENT AND CRUSH SYNDROME: CASE REPORT AND LITERATURE REVISION

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Necrotizing fasciitis is an acute infection that goes thru subcutaneous tissue and deep fascia producing tissue necrosis with severe systemic manifestations. The multidisciplinary treatment of this entity is antibiotic therapy, surgical debridement and hemodynamic support. However an early and correct diagnostic and an early therapy is a difficult challenge for surgeons because of the high morbid mortality of this disease. We present the case of a 30 year old male that had a traffic accident and was taken to our institution. The patient was initially treated according to the ATLS protocols and with Damage Control initial therapy, he was diagnosed with unstable pelvic fracture and with bilateral pelvic extremities compartment syndrome, Crush syndrome and hematocele. The patient went under initial surgery for fasciotomy and surgical debridement. After this he presented Fournier Gangrene and Necrotizing Fasciitis. Specific antibiotics where given and surgical interventions were performed that consisted first in debridement and later skin graft implantation. The patient has had a good clinical evolution with adequate graft integration and in physical therapy. The pelvic fracture needs to be fixated after the patient has a complete systemic recuperation. After reviewing the literature, all the pathologies alone that were presented in this case account less than 1%. The early diagnose and the correct end fast therapeutic approach had an important positive effect in this case. The specific antibiotic therapy combined with an adequate hemodynamic support and multiple surgical procedures where the pillars to a favourable clinical evolution and a fast recovery for the patient.

Abstract no.: 27440

**TRANSTROCHANTERIC UNSTABLE FRACTURES TREATED WITH
UNCEMENTED CALCAR SUBSTITUTION PROSTHESIS: SURGICAL AND
FUNCTIONAL OUTCOME COMPARED WITH OSTEOSYNTHESIS
TREATMENT**

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Transtrochanteric femoral fractures in elderly patients are associated with a high incidence of complications secondary to the fracture itself, the surgical procedure or the conservative treatment. The purpose of this study is to compare the functional and overall outcome in patients treated with osteosynthesis versus bipolar non cemented calcar replacement prosthesis. We included 45 patients with unstable AO 31 A2.1 to 31 A2.3 femoral fractures, fifteen of them treated with an intramedullary femoral nail, fifteen with dynamic hip screw and fifteen with bipolar non cemented calcar replacement prosthesis. The functional analysis was made with Harris Hip Score in each group. The functional outcome in the three group studied was similar at six months and one year. The surgical time used was longer in patients with prosthetic surgery than in those treated with osteosynthesis. Finally there were more complications in patients that had gone through arthroplasty than in those with conservation of the natural bone structures. The results obtained in this study here compatible with the current literature. Even though these patients have associated co morbidities and low osseous density the standard surgical treatment is primary osteosynthesis with early mobilization and avoiding complications. The use of calcar substitution prosthesis allows the patients to have an early walking recovery. However, the surgical time, bleeding, and trans- and post-surgical complications are higher and more severe in these patients.

Abstract no.: 27448

CONGENITAL PSEUDARTHROSES OF LEG BONES IN CHILDREN

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Objective: To study the causes of congenital pseudarthrosis of leg bones and efficiency of surgical treatment. Patients and Methods: The results of a complex examination and the treatment of 122 patients with congenital pseudarthrosis of leg bones are studied. Results: It was found that the causes of disease are: neurofibromatosis (81), myelodysplasia (22) and fibrous dysplasia (19). In neurofibromatosis and myelodysplasia in the basis for false joints are neurotrophic disorders. Typical is a latent pseudarthrosis at birth with the progression of deformity and thinning of the affected bone. Provoking factor of pseudarthrosis is a pathological fracture. Deformities, limb shortening, significant thinning and sclerosis of ends of bone fragments, degenerative changes in bone tissue throughout the diaphysis and epiphysis, lowered bone growth, weak ossification at the ends of bone fragments up to complete absence are observed. In fibrous dysplasia the provoking factor is a pathological fracture. The ends of the bone fragments are thickened, sclerotic, they reveal foci of fibrous dysplasia, and the structure of bone tissue distant from the false joint is unaltered. Histologically, we see structures that are characteristic for fibrous dysplasia. In not progressing latent pseudoarthrosis a conservative treatment was undertaken. Progressing course is an indication for the preventive bone plasty by allografts. The consolidation of bone fragments in true false joints was achieved using the developed open and lateral compression osteosynthesis by supporting plates taken from cortical allogenous bone. In 97,5% of cases the supporting function of the limb was restored.

Abstract no.: 27474

TREATMENT OF UPPER LIMB DEFORMITIES WITH EXTERNAL FIXATION

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For treatment of upper limb deformity and lengthening a modified special external hinge distraction system has been developed, which allows the combined Treatment of congenital and acquired complex deformities of the upper limbs. Since 1995 to 2009 this new system was used in 120 patients with deferent indications in the upper limbs they presented with upper limb length discrepancies and axial deviations and deformities. The hinges where used are modified system of /SLDF1; Salamehfix 1 /which had the WIPO certificate. Results: The used hinge system allows multiplanr corrections, deferent size of used arcs makes it more suitable in shape and allows joint movements freely, the insertion of wires and pens in a nearly right angels makes the fixation more stable in addition to insertion in a minor painful regions makes it more tolerable, good correction and x-ray control is easy. Conclusion: The new developed hinges are easy to use and allow the treatment of complex deformities of the upper limbs.

Abstract no.: 27526

CARTILAGE TISSUE REPAIR: EFFECTS OF CHITOSAN SCAFFOLDS

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Introduction: Many different types of biomaterials have been tested in order to facilitate or promote cartilage tissue repair. The choice of the material is critical for the success of tissue engineering approaches. Chitosan is considered a promising material due to its structure, similar to glycosaminoglycans present in articular cartilage, and its ability to be processed into porous scaffold. Unfortunately, physical properties and biological response depends heavily on molecular weight and deacetylation degree, therefore, the choice of the starting material deserves careful consideration. **Objetive:** The aim of this work is the study of different starting chitosan materials for cartilage regeneration. **Methods:** Chitosan molecular weight, deacetylation degree and calcium content were tested. Six chitosans with different properties were obtained and implanted in rabbit knee osteochondral defects. 3 months after surgery samples were harvested and their gross morphology and histological appearance evaluated. **Results:** Considerable influence of the material molecular weight in the scaffold structure was observed. Chitosans with worse biodegradation properties generated multiple adverse tissue responses and no bone/cartilage tissue formation was observed. However, samples which show good biodegradation properties didn't induce adverse responses and stimulate slightly bone and cartilage tissue regeneration. Thus, these results show a greater sensibility of the articulate cartilage environment to biomaterial properties. **Conclusions:** Chitosan properties are variable and this is reflected *in vivo*. Different tissue responses were observed depending on its properties. The chitosan with calcium-carbonate, the lowest molecular weight and the lowest deacetylation degree is the best of those tested for ostochondral defect repair.

Abstract no.: 27531

LIMB LENGTHENING AND AXIAL DEVIATIONS USING SLDF SYSTEM

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For the treatment of limb lengthening and correction of axial deviations a special external hinge distraction system has been developed, which allows the combined Treatment of congenital and acquired complex deformities of lower and upper limbs. Since 1995 to 2009 this new system was used in 450 patients with deferent indications in the lower limbs they presented with limb length discrepancies and axial deviations. The External Fixation Hinge System / SLDF1; Salamehfix 1/; is an arch hinged system consists of arches with a various diameters and perimeters, to assemble the deferent sizes of the limb in the upper and distal part with connecting special hinges , deferent sizes of arcs to choose a special size for each patient with keeping an excellent technical functions; multiplanar multidirectional corrections; makes the fixator more suitable to each patient in size and allows the patient to move his joints freely, Stable fixation because of insertion wires and screws in nearly right angels, the insertion of wires and half pens in a minor painful regions makes the tolerance to the fixator is more acceptable. X-Ray control is easy. Complications where mostly superficial pin infections, no nerve or vascular injuries. The new developed hinges are easy to use and allow the treatment of complex deformities with lengthening.

Abstract no.: 27542

PROXIMAL FEMORAL RECONSTRUCTION USING ANGLE BLADE PLATE IN AGGRESSIVE LESIONS OF PROXIMAL FEMUR IN CHILDREN

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PURPOSE: To describe cases of aggressive lesion involving the proximal femur in children presenting with pathological fracture and its treatment in children under 10 years by reconstruction using angle blade plate **METHODS:** Case records and radiographs of children with aggressive lesion involving proximal femur were studied.

Cases of fibrous dysplasia, aneurysmal bone cyst and chondroblastoma presented with pathological fracture of proximal femur. In all these cases, the head of femur was unaffected and we aimed at preserving the normal hip joint and hence avoiding a primary early total hip replacement in children. All were treated with a uniform approach consisting of biopsy, intralesional curettage and reconstruction using Angle blade plate as a primary reconstruction implant for stability and the bone gap being filled by one form of a graft.

RESULTS: All these cases obtained satisfactory outcome after treatment with a mean follow up of three and a half years in terms of range of motion and pain relief. All fractures healed and there were no cases of avascular necrosis. **CONCLUSION:** Angle blade plate is a good, cheaper implant with good stability and can be used in aggressive lesions other than its routine use in trauma. A primary total hip replacement can be avoided in children reserving it for later age. Results suggest that a uniform approach based on preservation of the femoral head can be applied successfully to the treatment of these lesions with good local tumor control, fracture healing, and acceptable functional outcomes.

Abstract no.: 27545

**MIRROR FOOT AND OUR SURGICAL EXPERIENCE: A CASE REPORT
AND LITERATURE REVIEW**

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OBJECTIVE: To report a rare case of mirror foot with fibular dimelia and our surgical experience. **METHODS:** To provide a sensate, near normal foot with ability to wear shoes was the aim which is difficult to achieve in this variant with fibular dimelia and calcaneal duplication with a delayed presentation at 6 yrs. **RESULT/CONCLUSION:** The case obtained satisfactory cosmetic and functional outcome upon excision of accessory calcaneum and the medial three toes along with covering the defect with local full thickness skin flap: a first of its kind mentioned in literature.

Abstract no.: 27565

OSTEOPLASTIC MATERIALS EVOLUTION IN SUBSTITUTION OF POST-RESECTION HAND BONES DEFECTS

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In tumors we use external fixation of affected segment and osteoplastic materials for hand bones reconstruction. We applied indirect computer densitometry on hardware-software complex "DiaMorph" to study dynamics of newly-formed bone tissue remodeling in post-resection defects substitution, quantitative reparative osteogenesis assessment and osteoplastic materials evolution. We studied 90 X-rays of patients with hand injuries. We used spongy and cortical autografts and biocompatible material KollapAn. We followed treatment results in pre-operative period, after surgery, in 1, 2 months after transosseous osteosynthesis, 1, 3, 6 months and one year after frame removal. We studied dynamics of average optical density (AOD) which characterizes overall mineralization and structures correlation with different mineralization degree in intact phalanges area. We compared results of defects substitution by spongy and compact bone tissue grafts, and KollapAn. We noticed the difference of osteoplastic materials evolution, reparative processes nature and duration of organotypic bone tissue remodelling. Reparative processes have largely unidirectional nature but there are some features of bone tissue remodelling specific to each implanted material type. We observed wave-like AOD dynamics of injured phalange is more active in compact bone tissue autograft application. Spongy autografts and KollapAn were almost radionegative due to destruction process. Compact bone tissue autograft were radiopositive because of dense plate's position and bone marrow spaces absence. Their AOD were higher than spongy autograft and KollapAn density. Compact bone tissue autografts undergo longer remodelling and preserve anatomical function of hand segment. Biocomposite materials remodel longer and need fixator during all defect substitution period.

Abstract no.: 27575

**LIGAMENTOTAXIS IN RESISTANT & NEGLECTED CLUBFOOT
– AN OVERVIEW**

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Twenty Relapsed and Neglected clubfoot deformities in patient of age group from 18 months to 10 years were treated with Joshi's external stabilization system during Nov 2008 to Aug 2010. The principle of controlled differential fractional distraction was followed. This system gives proper correcting force to the individual component of deformities, using distraction forces. These forces are consistent by gradually increasing adaptation. The radiological evaluation of feet was done prior to surgery to know the alignment of bones for deciding the extent of correction required. Link joints are the basic holding units of the system which were mounted on K wires anchored to the bone. Each component deformities were sequentially distracted. The fractional distraction was done for 4-6 weeks followed by static phase of 3-4 weeks with post fixator plaster for 8-10 weeks. Functional Evaluation results showed improvement in flexibility and Active movements. Results were graded according to the criteria given by Bensahel et al, 2005 as Excellent in 6 feet, Good in 10 feet, and Fair in 4 feet. In almost all cases, plantigrade feet with satisfactory radiographic improvement were achieved. The principle of controlled differential fractional distraction not only controls the magnitude of correction of the component deformities but also lengthens the contracted tissues (Histogenesis) thus there is significant gain in foot length. Smaller medial border also achieved a near normal dimension to the lateral border after correction. Key Words: Resistant & Neglected Club Foot- External Fixator- J.E.S.S.

Abstract no.: 27582

**RECONSTRUCTION OF BILATERAL SPONTANEOUS CHRONIC
IDIOPATHIC ACHILLES TENDON RUPTURE: CASE REPORT**

Vishal KUMAR, Mandeep DHILLON

PGIMER, Chandigarh (INDIA)

INTRODUCTION: Spontaneous bilateral idiopathic rupture of Achilles tendon is a rare entity. It is usually a result of sudden dorsiflexion of the plantar-flexed foot with degenerated or diseased tendon. Spontaneous bilateral rupture is not rare in patients suffering from chronic diseases like systemic lupus erythematosus and rheumatoid arthritis who are receiving treatment with corticosteroids and in patients with xanthomatosis.

METHODS/RESULTS: We are reporting a case of Idiopathic neglected bilateral tendoachilles rupture which is unusual because the patient has neither taken steroids nor suffering from any chronic disease. This was reconstructed with use of LARS (composed of polyester). Patient had bilateral wound dehiscence which settled after few debridements & local flap coverage. This was followed by aggressive rehabilitation & finally the patient got excellent functional outcome. **CONCLUSIONS:** Bilateral rupture of Tendo-Achilles could occur in absence of precipitating factors; idiopathic variant does exist. Use of LARS ligament for reconstruction of bilateral, neglected Tendo-Achilles injury gives early and excellent functional recovery but one has to be careful regarding high wound healing issues. Wound complications are known to occur with this much of nonabsorbable material; this problem demands refinement in technique & proper case selection.

Abstract no.: 27584

TALO-NAVICULAR ANGLE ON SONOGRAPHY DURING PONSETI CORRECTION OF CLUBFOOT: A PROGNOSTIC INDICATOR?

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Introduction: Aim of clubfoot treatment is to accomplish normal looking, properly functioning, plantigrade, painless foot. Severity of clubfoot is assessed by Dimeglio and Pirani scores which has interobserver variability. Sonography is an useful tool to visualize cartilaginous bone. We aim to see angle between talus and navicular on sonography and find how this angle prognosticate correction of clubfoot during Ponseti method of manipulation.

Materials and methods: 26 cases of unilateral virgin clubfeet were treated with Ponseti method. Ultrasound was done in oblique medial coronal projection at start of treatment, after midfoot correction, and after achieving final correction. Angle between long axis of talus and navicular was measured.

Results: The mean initial talo-navicular angle in clubfeet (66.460) in neutral position were significantly different from these angle in normal contralateral feet (101.30), taken as control. The initial talo-navicular angle ($p<0.008$) as well as the change in angle on simulated Ponseti manipulation ($p<0.001$) showed significant negative correlation with the total number of casts applied to achieve final correction. This correlation was better than the correlation between clinical scores and total number of casts applied. ($p=.024$ for Dimeglio score and $p= .008$ for Pirani score).The angle change was the most significant predictor of total number of casts applied.

Conclusion: Sonography is a useful tool in monitoring clubfoot correction and the talo-navicular angle is a good measure of flexibility of clubfoot and has definite predictive value in prognosticating the outcome.

Abstract no.: 27602

MANAGEMENT OF PAINFUL HIP IN CHILDREN IN ERBIL TEACHING HOSPITAL

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Objectives: painful hip in children, known as irritable hip, is a common pediatric problem and there are several causes for hip pain. In this study we will show the most common causes of hip pain in children and to evaluate the procedures which are performing at our hospital with a view of establishing which parameters are most relevant in clinical decision-making.

Methods: This is a case review study which carried out at Erbil Teaching Hospital between December 2006 and October 2007. 62 patients who had consultations and/or been admitted at our hospital complaining of hip pain were included in this study. We did investigations for them and we reviewed their clinical, laboratory and imaging documents.

Results: the differential diagnosis was transient synovitis (TS)54.8%, Legg-Calves-Perthes disease 24.2%, septic arthritis (SA)8.1%, traumatic synovitis 4.8%, avulsion fractures 3.2 %, brucellosis 1.6%, tuberculosis 1.6%, and non specific synovitis 1.6%. We found that three or more criteria, (the clinical and laboratory parameters), were present in all cases of septic arthritis (100% sensitivity), but also were present in 10% of non septic conditions (90% specificity). Radiographs showed abnormalities in 50% of the cases. Ultrasound showed joint effusion in 43 patients with 100% of sensitivity.

Conclusions: transient synovitis is the most common cause of irritable hip. Application of our scheme might result in a reduction of the number of patients who need hospital admission and also reduction of invasive procedures and containment of the cost.

Abstract no.: 27622

WHICH SUBGROUP OF RHEUMATOID ARTHRITIS PATIENTS BENEFITS FROM SWITCHING TO TOCILIZUMAB VERSUS ETANERCEPT AFTER PREVIOUS INFILIXIMAB FAILURE?

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OBJECTIVES: Recent studies have shown an improvement in disease activity in patients with rheumatoid arthritis (RA) who have switched between anti-TNF α therapy for reasons of lack of efficacy. This analysis compares switches to another anti-TNF α or to an IL-6 receptor inhibitor. **METHODS:** A retrospective study of 38 RA patients with an inadequate response to infliximab was conducted. The responses of subjects switching from infliximab to tocilizumab ($n = 22$) were compared to those of subjects switching to etanercept ($n = 16$). Data were analyzed for serum biomarker levels and clinical response. Disease activity was assessed by Disease Activity Score 28-CRP (DAS28-CRP), Simplified Disease Activity Index (SDAI), and Clinical Disease Activity Index (CDAI). **RESULTS:** Twenty-one patients completed 24 weeks of tocilizumab treatment, and 15 patients completed 24 weeks of etanercept treatment. In both treatment groups, 1 patient each discontinued treatment because of lack of efficacy. No serious adverse events occurred during the study, and no patients withdrew due to adverse events in both groups. At week 24, there was a significant reduction from baseline in DAS28-CRP, SDAI, and CDAI after switching to either tocilizumab or etanercept, and there was no significant difference in efficacy as measured by DAS28-CRP, SDAI, and CDAI between the two treatment groups ($p = 0.71, 0.53, 0.58$ respectively). These results suggest that safety and tolerability were similar for both treatments. **CONCLUSIONS:** A switch from infliximab to either tocilizumab or etanercept in patients with RA who have not responded to infliximab is a feasible, well-tolerated treatment option.

Abstract no.: 27630

**CLINICAL EFFECT OF OSTEOARTHRITIS TREATMENT BY DRUGS ON
THE BASE OF BLOOD SERUM**

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The experience of the treatment 112 patient's joints by transfusional chondroprotection method showed the necessity of blood serum modification by drugs with special action. The drugs were chosen with regard to etiopathogenesis of osteoarthritis. Their single dose was introduced into the patient organism. The blood was withdrawn at the period of the maximum bloodstream saturation by drug, and after that the serum was produced. Autoserum was introduced in 41 knee joints of 36 patients with 2-3 stage osteoarthritis different etiology - posttraumatic, rheumatoid, bacterial, viral. The estimation of treatment results using adapted to natural joint HSS scale showed high clinical effect. The function of joints before treatment was 48-57 points and 6 months after treatment – 77-88 points. All patients felt significant reduction of the pain syndrome, easiness of sliding in the joint, elimination of articular crepitation and constraint, ability to sustain without pain in constrained position of the foot for a longer time. Complications and allergic reactions were not registered during treatment.

Abstract no.: 27660

PATELLA RESURFACING VS NON RESURFACING IN TOTAL KNEE REPLACEMENT: A META ANALYSIS OF KNEE SCORES

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A meta-analysis of Randomised Control Trials (RCTs) was undertaken to answer the hypothesis that patella resurfacing (PR) in primary total knee replacement (TKR) improves outcome, as assessed by various knee scores. Sixteen RCTs of PR vs. non patella resurfacing (NPR) in primary TKR met the inclusion criteria. There were 3347 knee replacements of which 1654 underwent patella resurfacing and 1693 did not. All pooled data was analysed using the RevMan software package. The Knee Society Clinical Rating Score (KSS) was used in 13 studies, the Hospital for Special Surgery Score (HSS) in two, the Oxford Knee Score (OKS) in one and the Bristol Knee Score in one. This meta-analysis demonstrated a significant difference between PR and NPR in favour of resurfacing for the Knee Score element of the Knee Society Score ($p=0.005$). The Function element of the Knee Society Score and all other scores demonstrated no significant difference. This result is different from other Meta analyses and we will explain this as well as provide the detailed results at presentation.

Abstract no.: 27663

PATELLA RESURFACING VS NON RESURFACING IN TOTAL KNEE REPLACEMENT: A META ANALYSIS OF PATIENT SATISFACTION

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We performed a meta-analysis of Randomised Control Trials (RCTs) to answer the hypothesis that patella resurfacing (PR) in primary TKR improved patient outcome, as assessed by patient satisfaction surveys, at the expense of increased operative time and infection rate. Sixteen RCTs of patella resurfacing vs. non-resurfacing (NPR) in primary TKR met the inclusion criteria. Data (3347 knee replacements of which 1654 PR and 1693 NPR) was extracted independently by two authors. All pooled data was analysed using the RevMan software package with random-effect models used if heterogeneity was significant ($p=<0.1$). Nine studies reported on patient satisfaction, 485 of 539 (90%) PR were satisfied with the outcome compared with 488 of 548 (89%) NPR ($RR=1.01$; 95%CI 0.97-1.05). There was no statistical significant difference. Three studies reported on operative time, mean times ranged between 126 -86 minutes for PR and 124-81minutes for NPR. There was no statistical significant difference. Twenty five (1.6%) infections were reported in PR group of 1598 TKRs and 35 (2.1%) in NPR group of 1638 TKRs. There was no statistical significant difference between PR and NPR using the random effects model ($RR=0.74$ (0.45-1.21)). Nine out of ten patients are satisfied with the outcome of TKR regardless of patella intervention. Patella Resurfacing is not without risk and has no statistical advantage in terms of patient satisfaction with the outcome of surgery and does not increase statistically the length of surgery or the infection rate.

Abstract no.: 27691

ENDOVASCULAR STENTING FOR BRACHIAL ARTERY INJURY WITH HUMERAL SHAFT FRACTURE

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Injury to brachial artery with humeral shaft fracture is uncommon but can threaten the viability, needs immediate procedures to restore the blood flow. The traditional surgical management of brachial injury has been surgical repair immediately after emergency arteriography. Here we present a case of endovascular stenting to repair brachial artery disruption with humeral shaft fracture caused by traffic accident in a 53 year old male with 1-year follow-up. We consider the endovascular stenting is a feasible alternative to open repair in properly selected patients with brachial artery injury with humeral shaft fracture, resulting in shorter procedure time and less blood loss. Key Words: Brachial artery injury, Humeral shaft fracture, Endovascular stent

Abstract no.: 27695

RESULTS OF SURGICAL TREATMENT OF FEMORAL NECK FRACTURES

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The results of treatment of 164 patients with femoral neck fractures are researched. The fractures of the Pauwels III type were observed in 78.8% of patients, 74.2% has Garden III and type IV. The new wire-rod fixative (primary group) was used for osteosynthesis of femoral neck fractures on 113 patients. 62.2% of patients are elderly age people with mean age of 69 years. Three-blade nail was applied on 23 patients from 51 patients of control group. In 14 cases osteosynthesis was carried out openly. In 2 cases diaphysial onlay was set; in 7 cases screw was applied at the bottom of the fixative. 34 (66, 6%) of control group were patients aged from 60 to 90 years (elderly age), the mean age was 70 years old. In the primary group 49% of patients underwent osteosynthesis in a matter of urgency. In the control group 76,5% of patients underwent osteosynthesis at 4-7 days after admission. Surgery duration for primary group patients was an average of 78 18,9 minutes, in control group -113,8 20,9 minutes. Active management of patients after admission could reduce the duration of stay in hospital from $22,3,3 \pm 14,9$ to $14,5 \pm 5,1$ days. Good and satisfactory results in control group found at 75.8% of patients and poor at 24,2%. After ostoesynthesis of femoral neck fractures by using the wire-rod fixative good and satisfactory results were achieved in 94.3% of cases.

Abstract no.: 27735

**MEDIAL TIBIAL HEMI-CONDYLAR ELEVATION AS AN OPERATIVE
TECHNIQUE TO TREAT VARUS MALUNITED TIBIAL PLATEAU
FRACTURE**

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Keywords: hemicondylar elevation, tibia vara, malunion Abstract: Hemicondylar tibial osteotomy has been first reported as a corrective surgical option for neglected Blount's disease by Langenskiold in 1964. The indication for this procedure is largely reserved for the rare cases of excessive ligament laxity. To the best of our knowledge, literature search reveals only 6 cases, all of which were of Blount's disease and there has been no report of this procedure being used in Trauma. We therefore present a failed tibial plateau fracture fixation, which we successfully realigned using medial tibial hemi-elevation.

Abstract no.: 27745

DISTAL THIRD TIBIAL FRACTURE OSTEOSYNTHESIS BY A COMB TECHNIQUE

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Distal tibial fractures are rare lesions often associated with soft tissue injuries and with frequent functional deficits. Materials and Method: We report a prospective study of 24 patients (16 men, 8 women) treated by a "comb technique". For extra-articular fracture, a single lateral incision is done to perform a fibula osteosynthesis by plate. Image intensifier allows reduction of the tibia. Screws go through the fibula plate, the fibula and the tibia. For articular fractures, a mini anteromedial approach allows to reduce the articular surface of the tibial pilon. Fixation was done by percutaneous pins or screws. An articular external fixator completed the osteosynthesis and allowed early mobility of the ankle. Average age was 37 years, follow-up was 24 months. Eiology was 18 traffic accidents, 8 sports injuries and 4 falls. Distal screws were removed after 4 months. The 4 articular external fixators were removed at two months. RESULTS: The subjective and objective results were evaluated according to the AOFAS classification At 6 months, 24 patients had a limited dorsal flexion. One distal screw broke in a runner. At long-term follow-up, 12 patients with articular fractures kept a limited dorsal flexion and, 5 patients had a radiological tibio-talar joint narrowing, without significant pain. CONCLUSION: This comb technique avoids a large antero-medial approach to fix the tibial fractures. No infection occurred. The temporary distal locking of the fibula and tibia, gave temporary limited dorsal flexion at 6 months. Only articular fractures kept this limitation at long term follow-up.

Abstract no.: 27747

**PERCUTANEOUS SUTURE OF ACUTE ACHILLE TENDON RUPTURE:
A STUDY OF 60 CASES**

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Introduction: Achille tendon rupture can be treated by cast but re-rupture occurs, or by open surgery, but infection is frequent. Is Percutaneous suture able to avoid these complications? Material and Methods: A prospective study of 60 cases of percutaneous suture for Achille tendon rupture was done from January 2001 to September 2006. Suture technic was close to the Ma and Griffith one. Local anesthesia only was enough in 48 cases (80%). Non resorbable thread was used first (18 cases), then replace until now by resorbable vicryl® (42 cases). Twenty- Eight patients practiced sport, three with high competitor level. Results: Mean follow-up was 13 months (6–58). Eighty-nine percent patients return to sport activities at mean 5.2 months (3-12) at the same level in 68%. Return to work was mean 85days (15–270). One leg hop was possible in 90%, ankle was never stiffer than the other site. The repair tendon was always bigger than the other, and in all cases a ligh amyotrophy of the gastrocnemius was noted. There was no sural nerve complication. Five minor and three major complications occurred (one painful subcutaneous knot, oneAchille tendinosis, one algodystrophy and two vein thrombosis; two secondary ruptures and one deep infection). Conclusion: The technique is simple, reliable, cheap and gives better results than a classic open surgical procedure.

Abstract no.: 27763

**DCS IN REVERSE OBLIQUE AND INTERTROCHANTERIC FRACTURES
WITH SUBTROCHANTERIC EXTENSION**

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BACKGROUND: Reverse oblique fractures and intertrochanteric fractures with subtrochanteric extension are part of unstable intertrochanteric fractures. We have evaluated the results of AO 95degree Dynamic Condylar Screw in treatment **MATERIALS AND METHODS:** 30 patients with either reverse oblique or Intertrochanteric fractures with subtrochanteric extension were treated with DCS in between March 2005 to March 2010. **RESULTS:** We have classified the fractures into two groups; Group I includes all AO type 3.1, 3.2/ Boyd and Griffin Type 3 and Group II includes all AO type 3.3/ Boyd and Griffin Type 4. 26 of the total 30 fractures (84%) achieved a satisfactory union while 4 failed to unite. Final results were based on criteria (Kyle et al) suitably modified for Indians. Of the total 30 patients, we had 56% excellent results while 20% good results. Within the subgroup, the group I had 90% excellent results while in the Group II 50% had excellent results while 40% had good results. **CONCLUSIONS:** A 95 degree implant is an excellent method for complex reverse oblique and comminuted intertrachateric fractures. A PFN is also a good implant but we feel more technically demanding, issues of proximal screw convergence, jig related issues particularly in developing countries, long term studies are still awaited, issues of failure and salvage after PFN need to be studied. A DCS is easy to use the familiarity of exposure and use and advantage as a fixed angle implant should be continued to be used particularly in developing countries like India.

Abstract no.: 27765

OUTCOMES AFTER ANATOMICAL DOUBLE-BUNDLE ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION WITH SEMITENDINOSUS TENDON FOR HYPEREXTENSION KNEE: THE INFLUENCE OF TIBIAL TUNNEL PLACEMENT

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Background: The aim of this study was to evaluate outcomes after anatomical double-bundle anterior cruciate ligament (ACL) reconstruction with semitendinosus tendon for hyperextension knee. **Method:** We retrospectively studied fifty-five patients undergoing anatomical double-bundle ACL reconstruction. Patients were divided into hyperextension group ($\geq 11^\circ$, twenty-five knees) and normal group ($< 11^\circ$, thirty knees) by recurvatum angle. The postoperative knee stability was assessed with side-to-side difference (SSD) of anterior tibial translation (ATT) using Telos SE (Telos, Germany) and manual N test. Additionally, we assessed the relationship between the tibial tunnel position and the postoperative knee stability. **Results:** The mean SSD of ATT was 3.4 ± 2.1 mm in hyperextension group and 1.9 ± 2.8 mm in nomal group, which was a significant difference. The positive ratio of N test was also significantly lesser in hyperextension group. In hyperextension group, the tibial tunnel of the knee in which SSD was < 3 mm was placed significantly anteriorly than that of the knee which SSD was ≥ 3 mm. **Conclusions:** Outcomes of anatomical double-bundle ACL reconstruction for hyperextension group were significantly inferior to that for normal group in term of postoperative knee stability. Our data suggest that not posterior placement of tibial tunnel for avoidance of roof impingement but rather anatomical placement of tibial tunnel is useful to achieve better postoperative stability in hyperextension knee.

Abstract no.: 27771

USE OF VACUUM ASSISTED CLOSURE (VAC™) IN HIGH-ENERGY COMPLICATED PERINEAL INJURIES: ANALYSIS OF NINE CASES

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Our study reviewed nine patients who were treated with the VAC™ Abdominal Dressing System after suffering pelvic fractures and soft tissue loss after high-energy pelvic trauma. Between March 2008 and August 2009, our clinic treated nine patients with complicated perineal injuries from high-energy pelvic trauma with multiple irrigation and debridement procedures and broad-spectrum antibiotics. Protective ostomies were created for all nine patients. Required interventions were done for associated injuries, and VAC™ application was started. All patients were male, with an average age of 24.3 (range, 21-32) years, and a mean injury severity score (ISS) of 36.4 (range, 16-59). Wound diameters ranged from 15 to 30 cm, and wound depths ranged from 5 to 25 cm. The injuries included one traumatic bilateral hemipelvectomy, and three unilateral and two bilateral lower extremity amputations. Intensive care unit length of stay averaged 12 (6-19) days, and average hospital length of stay was 44.12 (31-64) days. Beginning at an average of day 17 (\pm 5.9 days) post-injury, wound cultures detected no bacterial colonization. One patient died on the 6th day after injury from septic complications. Two patients' wounds were closed by primary closure, and six patients' wounds were closed by split thickness grafts after an average of 31.4 (17-50) days. Optimal treatment of high-energy perineal injuries requires early and extensive debridement and rich irrigation. The application of the VAC™ system as temporary coverage of large complex wounds in the pelvic region enhances wound healing and facilitates an early grafting process.

Abstract no.: 27777

SENSITIVITY PATTERN OF MICRO-ORGANISMS IN SEPTIC ARTHRITIS OF NORTH INDIAN CHILDREN

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Purpose: Rapid diagnosis and early effective antibiotics therapy is the most crucial aspect of treating septic arthritis. Changing microbiological spectrum and emerging drug resistant strains pose a big challenge to the surgeon, with regard to conventional antibiotic use. We evaluated the bacterial strains and their sensitivity pattern in septic arthritis of North Indian children. Methods: Fifty children with septic arthritis were evaluated clinically, radiologically and ultrasonographically. Joint was aspirated and 2 cc fluid was sent for gram-stain and culture and sensitivity. Simultaneously two blood culture samples were sent for bacteriological evaluation. Results: Fifty percent of children had definite radiological evidence of septic arthritis whereas ultrasound noted fluid in joint in 98% cases. Aspirated fluid and blood culture could isolate the organism in 72% and 34% cases respectively. Most common organism isolated was *S.aureus* (62%) followed by *S.pneumoniae* and *Gr.B Streptococcus*. The bacterial strain showed significant resistance to commonly used empirical antibiotics. In 39%, 31% and 17% cases, these organisms were resistant to cloxacillin, amoxycillin and ceftriaxone respectively. However none were resistant to vancomycin and linezolid. Conclusion: *S. aureus* is still the most common organism in septic arthritis of North Indian children. Though a significant resistance to common antibiotic cocktail is noticed, the strain is susceptible to antibiotics like vancomycin and linezolid. These antibiotics may be used as empirical therapy till culture and sensitivity report is available. Key words: Septic arthritis; North Indian Children; *S aureus*; vancomycin; linezolid.

Abstract no.: 27815

INTERTROCHANTERIC FRACTURES TREATED BY DYNAMIC HIP SCREW PLATE: MEASURE OF IMPACTION IN RELATION TO THE LATERAL TROCHANTERIC WALL

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Medial and posterior-medial fracture fragment in intertrochanteric fractures are considered important prognostically. We aim to study measure impaction in relation to lateral trochanteric wall according to Evan's classification. 100 patients of IT fracture divided into two groups A of Evan's type I, II, IV which has intact lateral wall(n=52) and group B Evan's type III, V which has broken lateral wall(n=28). Radiological impaction and Functional assessment was done. Average impaction in group A was found to be 6 mm (range 4-12mm) whereas in group B (Evan's III and V) was 14.78 mm (range 8 to 30mm). Evan's V has more collapse than Evan's III. More was the impaction /collapse at the fracture site delayed was the union time in Evan's V. Average union in group B was 14 weeks as compared to 9 weeks in group A fractures. Shortening of the affected limb was less than 1 cm in group A while it was more than 1cm in group B patients. Excellent to good results were seen in 43 patients (86 %) with trochanteric fractures with intact lateral wall while group B showed excellent to good results in only 10 (35%) trochanteric fractures with broken lateral trochanteric wall. lateral wall should be carefully preserved to avoid the jeopardizing the stability of a reduced fracture.

Abstract no.: 27818

CORRELATION OF FOOT BIMALLEOLAR ANGLE WITH PIRANI SCORE TO ASSESS THE SEVERITY OF CONGENITAL TALIPES EQUINOVARUS (CTEV) DEFORMITY

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Anteromedial foot bimalleolar angle (FBM) on a footprint is used it as an objective evidence of severity of clubfoot deformity and correction achieved. This present study is undertaken to correlate the FBM with various pirani scores to assess the severity of CTEV deformity as objective evidence. 244 club feet in 137 children of idiopathic club foot treated by manipulation and cast application by ponseti method were included in study. The severity of deformity as per pirani score between 0 and 6 was calculated. The foot tracings were recorded on a sheet of paper. The anteromedial angle at the intersection was taken as the FBM angle and grouped according to Pirani score 0-1, 1-2, 2-3, 3-4, 4-5, 5-6 as group I to VI and compared for mean and standard deviation. Results - Mean age was 5.8 months. Mean FBM angle of Group 1 to 6 were 82.370 (range 75-92), 74.810 (range 67-80), 69.750 (range 63-74), 67.150 (range 60-79), 57.580 (range 48-69), and 47.890 (range 42-61) respectively with SD 3.871, 3.234, 2.786, 4.277, 7.200 and 5.246 respectively. The difference of mean of group 1, 2 and 5 was statistically significant with rest of the groups. FBM angle gives an objective as well as documented record of the severity of the deformity in club foot and on sequential record can be used as an indirect objective evidence of improvement/deterioration of foot deformity.

Abstract no.: 27819

TOTAL HIP ARTHROPLASTY AFTER FAILED TREATMENT OF PERITROCHANTERIC FRACTURES

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Background: Most peritrochanteric fractures are successfully treated usually with intramedullary nailing (IMN) and sliding hip screw (SHS). Salvage treatment with hip arthroplasty may be considered for selected older patients with poor bone quality. For the treating surgeon it can be a challenge. **AIM:** To evaluate the short-term functional outcome and complications of total hip arthroplasty (THA) following failed osteosynthesis of proximal hip fracture. **Materials and Methods:** We analyzed in a retrospective study, 9 patients complicated after hip fractures treatment (screw cut out and implant failure). Mean age of the patients was 78 years. Five patients were treated for unstable intertrochanteric fracture and four for subtrochanteric fracture of the hip. Cementless THA was done in all cases. **Results:** The average duration of follow-up was 2 years. The mean duration of surgery was 125 min and blood loss was 1300 ml. In all cases modular implants with long stems and bipolar or cementless cups have been used. There were no dislocations postoperatively. There was no superficial infection but in one case deep infections have been observed. Only one patient required a walker while 2 required walking stick for ambulation. The mean Harris Hip score increased from 32 preoperatively to 76 postoperatively. **Conclusion:** Total hip arthroplasty is an effective salvage procedure after failed osteosynthesis of hip fractures in properly selected patients. Most patients have acceptable clinical outcomes with good pain relief and functional improvements in spite of technical difficulties and high complication rates than primary arthroplasty. Calcar-replacement and long-stem implants often are required.

Abstract no.: 27820

**ENDOSCOPIC-ASSISTED CONTROL OF THE CORE DECOMPRESSION
OF THE FEMORAL HEAD**

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INTRODUCTION: Femoral head osteonecrosis is a progressive disease that requires prompt diagnosis and early treatment for better results. Core decompression of the necrotic area for treatment of idiopathic osteonecrosis of the femoral head was developed and published by Ficat and Arlet in 1962. The preoperative MRI scan can help the planning of the operation and the amount of the necrotic bone to remove. **AIM:** No intraoperative method can confirm that all necrotic bone was removed to the healthy bone limits of the femoral head. The endoscopic method provides direct visualization of the healthy bone limits. **METHODS:** It is a prospective study of 3 patients with a mean age of 45 years. The follow-up period was more than 15 months. Patients were evaluated with Harris hip score, radiologically, the intraoperative and postoperative complications and the necessity of conversion to total hip arthroplasty. **RESULTS:** Endoscopic evaluation was successful in 2 cases. The visualization of the healthy bone limits after removing of the necrotic bone wasn't able in one case because of technical difficulty. One AVNFH evolved and THA was necessary in this case. **CONCLUSION:** Core decompression and reduction of the intramedullary pressure in the bony compartment of the femoral head is an effective treatment for early stage. Endoscopic evaluation of the core decompression can greatly improve the therapeutic effect visualizing the limits of necrotic area of bone. Endoscopy thru the decompression tunnel of the femoral head is performed to assess the areas of the healthy bone of osteonecrosis.

Abstract no.: 27821

EFFECTS OF COTYLOPLASTY ON AN ACETABULAR REVISION OF FAILED TOTAL HIP ARTHROPLASTY IN PATIENTS WITH CONGENITAL HIP DISLOCATION

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Introduction: Revision of an acetabular component of a failed total hip replacement (THR) in patients with CHD is often more difficult than a standard revision. Several previous studies showed that previously placed structural bone graft, if revascularized, may assist in the acetabular reconstruction. On the other hand there are no studies demonstrating how previously cotoyloplasty technique may affect a future revision arthroplasty. **Aim:** The evaluation of the effects of a previously performed cotoyloplasty on an acetabular revision arthroplasty. **Methods:** We study between 2004 and 2009, 5 patients who underwent acetabular revision of a failed total hip arthroplasty and cotoyloplasty with and without concurrent femoral revision. The mean age of the patients at the time of the operation was 67 years. The mean duration of follow-up was approximately 1,5 years. **Results:** No acetabular components have been re-revised or had loosening according to our radiographic criteria. During revision arthroplasty, satisfactory bone stock was observed at the acetabular floor, enough to provide adequate support to the new acetabular implant in three cases. None of the hips had a loose component or deep infection. The mean Harris hip score was 80 points at the latest follow-up. **Conclusions:** The osteointegration of the bone graft used in the primary operation is essential for the success of the cotoyloplasty technique. Previously cotoyloplasty technique can help future revision arthroplasty by providing better acetabular bone stock almost in all cases. An acetabular component revision over a previously cotoyloplasty yielded overall good results after an intermediate duration of follow-up.

Abstract no.: 27823

**BILATERAL RUPTURE OF QUADRICEPS FEMORIS TENDON
ASSOCIATED WITH TYPE II DIABETES MELLITUS**

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INTRODUCTION: Quadriceps femoris tendon rupture (QFTR) is more frequent in patients with associated comorbidities as diabetes mellitus, gout, renal failure, lupus erythematoses, obesity and in eldery. A chronic mucosal degeneration-tenopathy gr.II was present before diagnosis of tendon rupture. Frequency of QFTR in healthy population is greater in middle aged patients and recreatives. Rupture is rarely bilateral. **AIM OF THE PAPER:** we present two cases of bilateral synchronous traumatic QFTR in patients with associated diabetes mellitus. **METHODS AND MATERIALS:** we present two male patients aged 56 and 60, treated for type II diabetes mellitus for 10 and 12 years, one with patella bipartita. No correction of insuline dosage was needed. Both patients gave data of a direct fall on both knees. Clinical examination showed bilateral QFTR 1.5cm above origin of patellar ligament and loss of continuity in quadriceps tendon suprapatellarly. Symptoms included pain, disability and loss of active extension strength. Radiography showed lower patella position. Echosonography confirmed complete rupture with massive suprapatellar haematoma. An operative reconstruction by combined Scuderi technique and Krackow suture was performed in both cases within 48 hr. Extension bilateral orthoses were applied postoperatively for 6 weeks, following physiotherapy for correcting extensor contracture. Follow-up was performed clinically and echosonographically in 1,3 and 6 months period. MRI was indicated in one case due to suspected rerupture and delayed tendon healing. **RESULTS:** In both cases a satisfactory movement amplitude and tight muscular strength was accomplished bilaterally.

Abstract no.: 27828

THE EARLY DETECTION AND MANAGEMENT OF UNSTABLE CONCENTRIC CLOSED REDUCTION OF DDH WITH PERCUTANEOUS K-WIRE FIXATION IN INFANTS 6 TO 12 MONTHS OF AGE

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A three-year retrospective review of 88 infants (M/F; 14/74) 6-12 months of age with 124 dislocated hips, was conducted to assess the efficacy of percutaneous K-wire fixation in achieving permanent hip stability. Twenty-one hips with concentric reduction but deemed unstable at closed reduction underwent K-wire fixation. Sixty infants (86 dislocated hips) had been initially managed with a Pavlik harness. A "hip-at-risk" instability test was developed to detect potentially unstable hips at the time of closed reduction that might dislocate in the hip spica cast and those hips were stabilized with a percutaneous K-wire through the greater trochanter into the pelvic bone. All 21 unstable hips that were stabilized with the K-wire technique maintained their concentric reduction and went on to stable development. Complications consisted of two minor pin tract infections. K-wire stabilization of unstable closed reductions is a safe, reliable technique for maintaining concentric hip reduction in infants 6-12 months of age with developmental dislocation of the hips.

Abstract no.: 27854

CLINICAL AND RADIOGRAPHIC OUTCOMES OF SCORPIO PLUS MOBILE BEARING TOTAL KNEE ARTHROPLASTY (STRYKER) IN PATIENTS WITH OSTEOARTHRITIS AND RHEUMATOID ARTHRITIS – MID-TERM RESULTS

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Purpose: The purpose of this study was to investigate the mid-term results of 38 knees in 33 patients undergoing total knee arthroplasty (TKA) using Scorpio Plus Mobile Bearing Knee System (Stryker), and compare outcomes between patients with Group A (osteoarthritis, osteonecrosis) and patients with Group B (rheumatoid arthritis). **Methods:** Two males and 31 females were followed up for a period of 4.9- 7.2 years. The clinical results (The Japanese Orthopedic Association knee rating score: JOA, ROM) and radiographic results (FTA, α , β , γ , δ) were evaluated. **Result:** The JOA improved significantly in both groups. The postoperative ROM was between 1.7°and 115°in Group A, and between 0.0°and 111°in Group B. The radiographs reveal 3.8°of tibiofemoral valgus angle in Group A and 4.9°in Group B. The Knee Society radiographic evaluation ($\alpha/\beta/\gamma/\delta$) were 95.9/ 88.9/ 5.5/ 85.7°in Group A, and 96.6/ 88.1/ 4.9/ 87.2°in Group B. No clear zone was revealed. Spontaneous dislocation of a polyethylene insert occurred in two patients, and one patient had undergone operation. Operative findings revealed failure of the locking ring and the original insert was replaced with a thicker insert. **Discussion:** Although there was significant improvement of the JOA in both groups, there were no significant differences between the groups with regard to the clinical results and the radiographic results. In our case, failure of the locking ring was the most likely cause for the polyethylene insert dislocation.

Abstract no.: 27855

HUMERAL SHAFT FRACTURE DURING ARM WRESTLING: CASE REPORT

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Objectives: Humeral shaft fracture is the most frequent injury associated with arm wrestling. Although a rare occurrence, it's suspected that the number of cases is far greater than reported.

Methods: This case concerns a 26 years old man, otherwise healthy, active in sports (mainly weight lifting, more than twice a week), admitted to the emergency room department with a swollen, tender left arm (just above the elbow) after embarking in an arm wrestling contest with a friend, with similar physique. He was sitting, in an offensive position for about 20 seconds, and exerted full force, in an effort to win the match. He referred a loud "cracking" sound upon injury. No pain was felt at the site of fracture prior to the match. No neurovascular compromise was found. Radiographs showed an external rotation-type spiral fracture of the distal humeral third. He was treated surgically, with a LC-DCP plate and interfragmentary screws.

Results: There were no complications in the post-op follow up (early physiotherapy was instituted), with complete functional recovery and fracture consolidation.

Conclusion: These fractures occur predominantly in men, when shoulder internal rotator muscles suddenly change from maximum concentric to eccentric contraction, while the elbow is fixed in flexion, creating a rotational force across the humeral shaft. Usually they aren't associated with severe comminution and can be treated conservatively or surgically. Other arm wrestling related injuries are fracture-separation of the medial humeral epicondyle (mostly in teenagers) and subscapular ruptures. The major possible complication is radial nerve palsy.

Abstract no.: 27867

IS ANTEROLATERAL KNEE INJECTION APPROACH SAFE AND EFFICIENT WITH NO LOCAL ANESTHESIA?

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Background: Nowadays, due to viscosupplementation, knee injection is again in fashion. There are many techniques to perform. The anterolateral approach is seldom used for this purpose, but is a common and safe arthroscopic surgical portal. The safety was measured by bleeding amount and efficiency by pain score; as they were performed with no anesthesia and if soft tissues or bone were injected it would be painful. **Aim:** Is anterolateral knee injection approach safe and efficient with no local anesthesia? **Surgical technique:** With the knee in a flexed position, the joint was injected in the center of a soft spot, parallel to the tip of the patellar bone. The soft spot is composed by the patellar tendon medially, tibial plateau inferiorly, lateral border of patella superiorly and the lateral femoral condyle laterally. **Method:** 200 knees were injected for different purpose. The immediately pain and bleeding were assessed by a pain score scale and a bleeding scale by amount and time. **Results:** 200 knees were injected. The mean pain score were 2, 3 and the mean bleeding were 1, 2 (scale 0 to 10 were 0 is no bleeding). **Conclusion:** This is a safe, comfortable and efficient method.

Abstract no.: 27873

**COMPARISON OF THE CHANGE OF PATELLAR HEIGHT BETWEEN
OPENING AND CLOSED WEDGE HIGH TIBIAL OSTEOTOMY**

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Purpose: There were a significant amount of studies that patellar height was changed after opening wedge high tibial osteotomy (o-HTO), but a few studies after closed wedge (c-) HTO. The purpose of this study was to examine patellar height on preoperative and postoperative radiograph, and compare the change of patellar height between o-HTO and c-HTO. **Methods:** 17 patients (22 knees) were included, with an average age of 63.5 years (30-78 years). There were 3 males (3 knees) and 14 females (19 knees). 14 knees were underwent c-HTO and 8 knees were o-HTO. Standard lateral radiographs of the knee around 30° of flexion were obtained preoperatively and postoperatively and at one year after the operation. The patellar height was measured by method of Insall-Salvati ratio (ISr) and modified Blumensaat ratio (mBr). We defined value of mBr is the ratio of distance from Blumensaat line to the middle at patellofemoral joint of the patella against the length of Blumensaat line. **Results:** The mean ISr postoperatively and at one year did not significantly differ that preoperatively in both c-HTO and o-HTO group. The change of ISr after HTO was not due to type of HTO ($p=0.171$). In c-HTO group, the mean mBr postoperatively and at one year did not significantly differ that preoperatively. In o-HTO group, the mean mBr postoperatively (0.763) and one year (0.704) significantly differ that preoperatively (0.857). The change of mBr after HTO was due to type of HTO ($p=0.0165$).

Abstract no.: 27911

**USE OF ACELLULAR ALLOGRAFT DERMAL MATRIX (ALLODERM®)
AND SPLIT-THICKNESS SKIN GRAFT FOR TREATMENT OF DIABETIC
FOOT ULCER**

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Purpose: An acellular allograft dermal matrix (AlloDerm®) and split-thickness skin graft is a useful method for the soft tissue coverage of the lower leg, and lesion around the foot and ankle. We present our experience with the acellular allograft dermal matrix (AlloDerm®) and split-thickness skin graft for the coverage of a soft tissue defect due to ulceration, necrosis, and trauma in diabetic patients.

Materials and Methods: We treated 6 diabetic patients who showed soft tissue defects around their lower leg, foot and ankle. The causes of the soft tissue defect were an ulcer and infection in 5 cases, and trauma in 1 case. The sites of the soft tissue defect were around the ankle in 2 cases. In the other cases, the defect site was the lower third of the leg, the hind foot, the foot dorsum. The mean follow up period was 6.4 months. The size of the soft tissue defect ranged from 4×3 cm to 15×10 cm.

Results: All acellular allograft dermal matrix (AlloDerm®) and split-thickness skin graft survived. There was no recurrence of the soft tissue defect during the follow-up period.

Conclusion: The acellular allograft dermal matrix (AlloDerm®) and split-thickness skin graft is a valuable method for covering certain types soft tissue defect of foot and ankle in diabetic patients.

Abstract no.: 27913

A SAFE ZONE IN MEDIAL OPEN WEDGE HIGH TIBIA OSTEOTOMY TO PREVENT LATERAL CORTEX FRACTURE

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Lateral cortex fracture in open high tibia osteotomy (OHTO) may result in displacement of the osteotomy. This cadaveric study aimed to study the effect of direction of osteotomy on incidence of lateral cortex fracture and to define a “safe zone” through which medial OHTO could be performed with minimal risk of lateral cortex fracture. Medial OHTO was performed in 9 fresh – frozen human cadavers (18 knees) with each specimen randomly assigned to a “safe zone” medial OHTO (group A, plane of osteotomy directed obliquely to end between the tip of the fibular head and the circumference line of the fibular head) or a medial OHTO directed at a lower level (group B, plane of osteotomy directed obliquely to end distal to the circumference line of the fibular head). Lateral cortex fracture and fracture gap after the osteotomy were measured and compared group A and B using AO tomofix spreader. Six out of nine knees (67%) developed lateral cortex fracture in group B compared to none in group A ($p = 0.009$) when the osteotomy site was distracted to a maximum of 20 mm. The level of osteotomy site in OHTO affects the lateral cortex fracture. Directing the plane of the osteotomy towards the “safe zone” may prevent lateral cortex fracture and the potential loss of axial alignment after medial OHTO.

Abstract no.: 27915

**COMPUTER-ASSISTED VERSUS WEIGHT-BEARING SCANOGRAM
TECHNIQUE IN OPEN HIGH TIBIAL OSTEOTOMY: A PROSPECTIVE
COMPARISON OF POSTOPERATIVE CORONAL LIMB ALIGNMENT**

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Successful outcomes following high tibial osteotomy (HTO) require precise realignment of the mechanical axis of the lower extremity. We hypothesized that weight bearing limb scanogram (WBS) technique may show more accurate mechanical axis realignment than nonweight-bearing computer assisted (CAS) technique in OHTO. The purpose of this study was to compare coronal limb alignment using computer-assisted versus weight-bearing scanogram technique in open high tibial osteotomy (OHTO). Forty OHTOs performed using the WBS technique were prospectively compared with 40 OHTOs performed using the CAS technique for postoperative coronal limb alignment using the weight-bearing line (WBL) ratio on full length standing hip-to-ankle radiographs. The mean postoperative WBL ratio in the WBS group was significantly greater ($p = 0.001$) compared to the CAS group implying that the mean WBL ratio in WBS group was significantly closer to the postoperative WBL ratio target of 62% when compared to the CAS group. In the CAS group 10 limbs (25%) were undercorrected (i.e with a postoperative WHL of $\leq 50\%$) compared to none in the WBS group. Weight bearing limb scanography (WBS) technique may be more reliable and accurate for restoration of coronal leg alignment in OHTO. Navigation techniques for HTO may need to factor in weight-bearing to minimize deviations of limb alignment after OHTO.

Abstract no.: 27951

AVASCULAR NECROSIS OF VERTEBRAL BODY (KUMMELL'S DISEASE), LITERATURE REVIEW

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This is a literature review of rarely reported, poorly documented and poorly understood phenomenon of avascular necrosis of vertebral body collapse a condition described Over 100 year ago by Hermann Kummell. Patients usually had a trivial trauma which remains asymptomatic for months to years only to present later with progressive painful kyphosis and/or angular deformity. Evidences that favour aseptic necrosis as a mechanism of this phenomenon has been accumulating in recent years. In this presentation we will discuss the pathogenesis, clinical, radiological pictures and available treatment.

Abstract no.: 27952

INTERPOSITION ARTHRODESIS WITH AUTOLOGOUS GRAFT OF THE METATARSOPHALANGEAL JOINT AFTER FAILED KELLER-BRANDES RESECTION

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The resection procedure by Keller and Brandes was one of the most frequently applied methods. In the last period this method came more and more under fire: The weight bearing of the big toe but also the scrolling will be badly affected. The results of the resection are flail joints, imbalance and insufficiency of the tendons and transfer metatarsalgia. In these cases an arthrodesis with autologous iliac crest graft as an interposition represents a salvage procedure. The aim is to lengthen the big toe anatomically and to reconstruct a loadable first dactyl. From 2000 until 2009 we used this method in 16 patients. The osteosynthesis was carried out in 14 cases with a fixed angle plate and in 2000 two times with a one-third tubular plate. In all cases an unimpaired wound healing and a good incorporation of the iliac crest graft resulted. In no way a fatigue of material or pseudarthrosis appeared. The follow up was 5.4 years. The modified AOFAS forefoot score showed 74.07 of 90 accessible points. Therefore in 3 times very good, in 4 patients good and in 9 cases satisfying results were found. The postoperative assessment using the ASQ1 questionnaire showed an average pain during the first three days of 3.40 and an average pain after the third day of 1.92 (scale from 0 to 10). The subjective overall evaluation of the intervention resulted in the grade 1.50 (grades 1-6). 95% of the patients would have this surgery done again.

Abstract no.: 27954

INTRA-OPERATIVE PREPARED CEMENT SPACERS AND ORAL ANTIBIOTICS IN PERIPROSTHETIC HIP INFECTION

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Background: Antibiotic loaded PolyMethylMethAcrylate (PMMA) cement spacers are widely accepted in two stage revision for chronic periprosthetic infection in addition to intravenous (IV) antibiotics for 6 weeks in the interim between the two stages. **Material and methods:** The results of two-stage exchange hip arthroplasty are reported in 21 infected hips using antibiotic loaded intraoperative prepared cement spacers. Nine spacers were made purely of bone cement injected while in 12 hips the cement spacers were fabricated around a Rush-pin. In five hips the first stage of debridement was repeated before final re-implantation. The average period between the first and second stages was 16 weeks (range 12 to 22 weeks). Patients' risk factors were classified according to McPherson classification of hosts and extremities {McPherson, 2002 #352}. IV antibiotics were administered for one week followed by oral Linozolid ± Rifampicin for six weeks. **Results:** Methicillin Resistant Staph Aureus (MRSA) was found in nine cases, while Staph Aureus was found in three hips. Enterobacter cloacae was found in two, Methicillin Resistant Staph Epidermides (MRSE) in two and mixed growth in one. No organism could be identified in 5 hips. At a mean follow up of 30 months post re-implantation infection was successfully eradicated from all cases except two. **Conclusion:** The use of intra-operatively prepared PMMA spacers loaded with Vancomycin and Gentamycin with an internal metal splint was successfully used in two stage revision for peri-prosthetic hip infection. Short course of IV antibiotics followed by oral treatment was successful in this small series of patients.

Abstract no.: 27966

**PERIPHERAL BLOOD STEM CELL TRANSPLANTATION RESULTS IN
THE TREATMENT FOR OSTEONECROSIS**

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We tried multiple drilling and stem cell transplantation derived from peripheral blood to treat the early stages of osteonecrosis of the femoral head and to minimize patient morbidity. We then report the clinical and radiological results of peripheral blood stem cell transplantation and core decompression. 38 patients (63 hips) who had undergone surgery were divided in two groups based upon which treatment they had received: (1) multiple drilling and stem cell transplantation derived from peripheral blood stem cell transplantation, and (2) core decompression, curettage, and bone graft. The clinical and radiological results of the two groups were compared. We defined failure as the need for additional surgery, or a Harris hip score of less than 75. After a minimum 5-year followup, in group 1, 80% of patients with Stage IIa disease, 60% of patients with Stage IIb disease, and 46.2% of patients with Stage III disease had no additional surgery. In group 2, 66.7% of patients with Stage IIa disease, 66.7% of patients with Stage IIb disease, and 60% of patients with Stage III disease had no additional surgery. Survival rates of patients with Ficat Stages I or II lesions were greater than survival rates for patients with Stage III lesions. There was no difference of survival rate between two groups. We found that there was not a significant difference between the two groups. The same results were found between peripheral blood stem cell transplantation and the conventional method of core decompression.

Abstract no.: 27967

BLUE LIGHT-EMITTING DIODE (LED) ENHANCES OSTEOGENIC PROLIFERATION AND DIFFERENTIATION IN OSTEOBLAST-LIKE CELLS

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The use of phototherapy in medicine, defined as the administration of quasi-monochromatic light for the treatment of a wide range of medical conditions, has been thoroughly investigated, *in vitro* and *in vivo*. We investigated the effect of light-emitting diode (LED) light on osteoblasts. The purpose of this study was to investigate the effect of blue LED light on the osteogenic differentiation of osteoblast-like cells (SaOS-2 cells). We studied the biologic responses of an osteoblast-like cell line (SaOS-2) to stimulus of four different type (control, red, green, blue) wavelength of LED light. Biological properties stimulated by LED were evaluated by *in vitro* (osteoblast cell lines, Saos-2) tests such as cell attachment, proliferation and differentiation of cell lines to confirm the improvement of their proliferation and differentiation using Promega-proliferation assay, alkaline phosphatase activity. The analysis of gene expression for osteocalcin, osteonectin, osteoprotegerin were done through RT-PCR. The cell proliferation assay and alkaline phosphatase activity on the blue LED group showed a statistically significant improvement compared to other groups. On the cell migration assay, there was a statistically significant improvement on the blue LED group. On the molecular biologic analysis, the statistical differences were indicated in blue LED group on osteonectin, and osteoprotegerin. The treatment of osteoblasts-like cells with blue light LED promoted their proliferation and differentiation. The real benefits of LED light must be established by further investigations using well-controlled protocols.

Abstract no.: 27976

EFFECTS OF COMPRESSION AND TRANSFIXION OF THE PHYSES BY DIFFERENT SUTURES: EXPERIMENTAL STUDY IN RABBITS

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Purpose: Determine the alterations that occur in the distal femoral physis while being surrounded or transfixed with different sutures. Methods: Eighteen New Zeland rabbits (7 – 8 weeks old) were divided into four groups of six rabbits each. In group number 1a Prolene 3.0 suture was used. Group 2 was divided into two subgroups, number 2a sutured with a Vicryl 3.0 suture and number 2b with a linen 60 suture; in group number 3 a vicryl 4.0 suture was used. The suture in groups 1, 2a and 2b transfixated the physis in the external femoral condyle. In group 3 the physis was surrounded and not transfixated. Results: Shortening was observed in all operated limbs, being group number 3 the most affected (average, 9.75 mm.). There were 9 medial patellar dislocation (4 in group 2, 2 in group 1 and 2 in group 3). Five cases had varus deformity. Anatomopathologic results: The five layers of the physis were adequately preserved in all cases. No inflammatory response or giant cells, foreign objects or epiphyseal fusions were found. Connective tissue surrounding the suture was only found in group 2b. Conclusion: Damaged of the physis depends mainly of the amount of pressure over itself regardless of the suture used in each case because the anatomopathological results did not reveal any abnormalities; a greater varus and femoral shortening was found in group number 3 in which the pressure against the physis was greater in all its diameter without crossing the physis.

Abstract no.: 27984

**AUTOGENOUS TRANSPLANTATION OF ILIAC CREST APOPHYSIS TO
EPIPHYSEAL DEFECT OF TIBIA: AN EXPERIMENTAL STUDY IN DOGS**

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Introduction: Physeal arrest secondary to trauma can produce bone bar and growth disturbance. In order to treat this problem, we are searching for acceptable substitute after bar resection. **Material and method:** In our experience, we created a defect block in medial aspect of proximal tibial growth plate, including adjacent epiphysis and metaphysis, and replaced with autogenous iliac-crest apophyseal graft from ipsilateral side in 11 immature (4-5 months old) dogs. The iliac apophysis is composed of a fibro cartilaginous layer, cartilage similar to epiphyseal cartilage, and a physis. The graft included the physis and some overlying epiphyseal cartilage. The physeal transplants, using standard transplantation procedure, were evaluated to prevent growth disturbance. All dogs were followed up for 6 months. We assessed the result by radiography of tibia each month and after 6 month histological study was done. We measure angular deformity and length of tibia in compare with contra lateral side .For this purpose we used PMPL (plafond to medial aspect of plateau length) and PLPL (plafond to lateral aspect of plateau length) difference in AP(anteroposterior) radiographs in order to assess angular deformity and we used lateral radiographs for tibial length measuring. **Results and conclusion:** This procedure prevented minimized growth arrest, formation of Bone Bridge, genovarum (varus deformity) in most cases. In histological study the transplanted part and proximal tibial physis jointed to each other approximately with normal appearance. We suggest physeal transplantation in peripheral physeal bone bar may regain growth potential satisfactorily and prevents limb deformity.

Abstract no.: 27990

THE INTERNAL FIXATOR: A NOVEL TECHNIQUE FOR STABILIZATION OF TRANSFORAMINAL SACRAL FRACTURES AS A PART OF PELVIC RING DISRUPTION, A PRELIMINARY REPORT

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Introduction: sacral fractures are frequently displaced and unstable and sometimes associated with neurologic injuries. Reduction and stabilization of such fractures are difficult and carries risks of several iatrogenic complications. authors developed a new technique that might be a revival of sacral bar technique but with a much more biomechanically effective way and is characterized by being rapid, easy, reasonably safe, performed by minimally invasive technique and provides a reasonable stability almost without the need of fluoroscopy. Method: -Anterior Pfannenstiel approach with anatomical reduction and superior symphysial plate fixation -Patient brought to prone position Application of 2 , titanium, polaxial, Iliac screw 60 mm long each, 7 mm thick, one each side -Rod applied between the two screw heads after being passed deep to paravertebral muscles. All reduction was done through the anterior reduction and stabilization with no further manipulation posteriorly which is safer. This is the original technique; operative time was 70 minutes and blood loss 80 cc total. We followed this patient for one year. His fracture is fully united; he regained his full functions and retained his original occupation in 4 months post surgery. We did not reapply the method till we were sure it works for ethical considerations. We used in some subsequent cases a modification; used two iliac screws for each side connected them by two rods, worked well also. This is only to report this method that showed good results and we are currently running a larger study on both the original and modified technique.

Abstract no.: 28002

MODIFIED VALGUS OSTEOTOMY OF PROXIMAL FEMUR FOR TREATMENT OF FEMORAL NECK NONUNION

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Background: Femoral neck non-union is a challenging problem. If it is not treated properly, it will be ended with a catastrophe because the victims are younger and active patients and missing hip joint will result in a handicapped like person. If the head is viable, the best treatment is valgus osteotomy. In the original technique, site of non-union was not explored but in our technique, there is exploration and cleaning of non-union site and after reduction of fragments, fixation and subtrochanteric osteotomy were done. **Materials and methods:** Patients with established non-union of femoral neck fracture entered in study. Inclusion criteria's were age under 60 year's old, spherical head of femur without changing the density of it and femoral neck non-union at least 6 months after fracture. Non-union site was freshed and any hard ware was removed and head was reduced as possible and subtrochanteric valgus osteotomy to 150 degree was done and fixed with angle blade plate. Bone graft was not used. Patients were studied one year monthly for signs of union of fracture site and signs of avascular necrosis of femoral head. **Discussion:** Exploration of non-union has some advantages. At first, in some cases removing of broken implants would be necessary for proper insertion of new device. Second, better reduction of fracture site may improve fixation and biomechanics .Third, it seems that in these cases there were through union but in the original method, there were metaplasia of fibrous tissue in the fracture site non-union.

Abstract no.: 28012

SYMPTOMATIC CORACOCLAVICULAR JOINT: A REVIEW OF LITERATURE

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Coracoclavicular joint (CCJ) is a rare anomalous joint found between the coracoid process of scapula and the conoid tubercle of clavicle. The articulation has been extensively studied by means of anatomic, osteologic, and radiological investigations. Most of the cases are discovered incidentally with the symptomatic CCJ is rare. Authors aim to review all reported symptomatic CCJ in order to escalate the level of evidence in and formulate a treatment algorithm to aid clinician in planning the management. Material and Methods: A through literature was performed and the data from 17 (n=17) symptomatic cases of CCJ is analysed here. Results: CCJ is a rare and mostly an incidental discovery which is rarely symptomatic. However, when symptomatic the most common symptom is shoulder pain. The mean age of presentation was 42 years with a male to female ratio of 1.4: 1. The brachial plexus involvement was the most common pathophysiological explanation provided. Conservative trial was first line of treatment with very low success rate of 5.9%. Operating intervention with excision of anomalous joint had a success rate of 100%. Conclusions: Symptomatic CCJ rare and is more common in patients of Asian origin. Its rarity leads to lack of awareness in general orthopaedic community. Although rare when symptomatic may lead to delayed diagnosis or inappropriate management due to lack of evidence and poor description in most of orthopaedic textbooks. In spite of low success rate, conservative trial is advocated before embarking upon the operating intervention due to its non-invasiveness.

Abstract no.: 28020

NON-OPERATIVE TREATMENT OF DISPLACED TYPE II ODONTOID PEG FRACTURE WITH PHILADELPHIA COLLAR: A RARE CASE SERIES

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Background: There is consensus for non surgical treatment of Type I and Type III peg fracture but treatment of Type II fractures remains controversial. There is an increasing trend towards primary fixation of Type II peg fractures due to high rate of non-union especially if displacement is more than 5mm. We would like to share our experience of non surgically managed patients with displaced peg fractures treated with non rigid immobilisation. **Material and Methods:** A retrospective review of clinical and radiological records was performed for nonsurgically treated patients with displaced Type II peg fractures between years January 2003-April 2008. There were two males and seven females. All the patients were treated with Philadelphia soft collar. Patients were followed up for an average period of 24.8 months (8- 28 months) for clinical and radiological outcome. Functional outcome was measured according to the Smiley-Webster scale. **Results:** Fracture united in six patients uneventfully, while in three patients fracture failed to unite. Average time on union was 12.3 weeks. None of the patients had clinical or radiological signs of instability or delayed onset myelopathy during their follow up. Three patients had Excellent and four patients had good results and two had fair result as per Smiley-Webster functional scoring system. **Conclusions:** Displaced Type II peg fracture can be managed nonsurgically in select group of patients with multiple comorbidities and refusal for surgery. Adequate patient counselling and compliance with close clinico-radiological follow up is paramount to avert adverse clinical events and good functional outcome.

Abstract no.: 28039

INFLUENCE OF CEMENTLESS STEM SURFACE COATING ON PERIPROSTHETIC BONE REMODELING AFTER TOTAL HIP REPLACEMENT

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Aim: The aim of the study was to analyze the femoral bone remodeling after implantation of a stem with three different types of coating. **Methods:** We included 17 patients with unilateral total hip replacement with the same type of cementless stem that has three different surface coatings. We performed DXA scans 1 year after surgery both on the operated hip and the contralateral one and compared the results for each Gruen zone. **Results:** The highest bone mineral density loss was recorded in the proximal part, Gruen zones 1 and 7 with a mean percentage decrease of 25.27% and 33.02% respectively. This area corresponds with the fiber metal surface coating of the stem. In the mid portion, corresponding with a corundumized surface there was also a decrease in bone mineral density as compared to the contralateral side but with a smaller degree. In the distal part of the stem, which is polished, there was only a small decrease in bone mineral density. **Conclusion:** This study shows that implant coating geometry has an important role in determining the periprosthetic bone remodeling pattern after cementless hip replacement.

Abstract no.: 28042

TOTAL KNEE ARTHROPLASTY (TKA) IN PATIENTS WITH SEVER VARUS DEFORMITY: A COMPARATIVE STUDY

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Introduction: In Sever varus deformity for TKA, patients require more attention to the technical aspect of the arthroplasty, especially bony alignment and soft tissue balance. Soft tissue balance has an important role in outcome and can be achieved by appropriate resection of bones and soft tissue release. In this study, we try to compare outcomes of TKA between patients with Sever varus deformity and the other group. **Material and method:** Between 2005 and 2008, we had 100 cases, 55 patients with a preoperative varus deformity of less than 5 degree, and 45 patients with a minimum preoperative varus deformity of 30 degree. Age was from 59 to 80 years and primary disease in all was osteoarthritis (OA). We try to correct Sever varus deformity. The steps were: *Exposure,*Pay attention to mediolateral balance by medial release in extension- shift & resect technique- formal MCL release from tibia, * Distal femoral resection, *Femoral component rotation, * Tibial bone stock deficiency, * Residual lateral laxity ,*Correct internal tibial torsion in sever varus..... **Conclusion :** At a mean follow up of 12 month (every 4 month), the average knee score in the varus group was 87 points and for the nonvarus group it was 91 points.(p less than 0.02), post operative functional scores in the varus group approach, but were not equal to, the the other group. No implant has been revised, and no evidence of osteolysis or radiographic loosening was seen. There were no fair or poor results in the varus deformity group.

Abstract no.: 28084

TRUNK MOVEMENT AFTER ARTHROPLASTY IN PATIENTS WITH VARUS KNEE OSTEOARTHRITIS

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Objective: Trunk movement is important but still little understood after total knee arthroplasty. The alternation of trunk movement was analyzed in short-term after arthroplasty. **Materials and Methods:** The subjects were 23 patients with varus knee osteoarthritis (male: 3, female: 21). The femorotibial angle was evaluated on standing radiographs at pre- and post-arthroplasty. Using three-dimensional motion capture, the cadence, walking speed, stride length, step length, step width, range of motion of lower extremity joints (hip, knee, and ankle), and trunk movement (angle, speed, and displacement) were measured and compared between pre- and 4th post-arthroplasty week. **Results:** The femorotibial angle was improved from an average of 190 to 175 degrees after arthroplasty. The range of motion of the hip flexion, knee flexion, hip adduction on the arthroplasty side, and ankle dorsiflexion on the non-arthroplasty side were significantly increased after arthroplasty. Among gait parameters, the stride length significantly increased. Regarding the trunk movement, the maximal trunk speed to non-arthroplasty side and the maximal trunk displacement to arthroplasty side were reduced in the medio-lateral direction. The upward maximal trunk speed on the arthroplasty side increased and the maximal trunk displacement on the non-arthroplasty side decreased significantly in an up-down direction. **Conclusion:** Recovery of hip adduction during standing phase contributed the reduction of trunk movement to the operated side, which was beneficial to maintain trunk balance and prevent falls. Functional recovery of the lower extremities is a long-term process, and sustained functional training is necessary.

Abstract no.: 28091

EFFICACY OF AN ANTERIOR CERVICAL PLATE IN THE MANAGEMENT OF OSSIFICATION OF THE POSTERIOR LONGITUDINAL LIGAMENT

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Consensus is lacking about the most suitable method to treat cervical myelopathy caused by OPLL. The decision to perform an ACF to treat multilevel myelopathy is controversial because of the potential for problems in the grafted bone. The aim of this study is to evaluate the safety and efficacy of an anterior cervical plate (ACP) used in combination with anterior corpectomy with fusion (ACF) for cervical ossification of the posterior longitudinal ligament (OPLL). Methods: We evaluated the surgical outcome of ACF combined with insertion of an ACP for treating cervical myelopathy caused by OPLL. The study group comprised 68 patients who were treated from 2006 to 2009 and followed up for an average of 29.6 months. Results: No dislodgement of the grafted bone or implant was observed, and no patient developed infection, esophageal or tracheal lacerations, or rupture. Radiographs showed no evidence of nonunion. The mean preoperative and the final follow-up C2-C7 lordotic angle were $6.2^\circ \pm 9.5^\circ$ and $9.4^\circ \pm 7.6^\circ$, respectively. The preoperative and the final follow-up lordotic angle of the fusion area were $2.0^\circ \pm 8.1^\circ$ and $5.9^\circ \pm 6.4^\circ$, respectively. The average recovery rate of the Japanese Orthopaedic Association score was 63.0%. The surgical outcome of ACF with an ACP is satisfactory. Conclusion: Insertion of an ACP is a good solution for preventing problems with the grafted bone after ACF. Our study suggests that the indications for an anterior-only procedure for the management of cervical OPLL can be expanded.

Abstract no.: 28108

REDUCTION IN PATELLAR THICKNESS CONTRIBUTES TO BETTER CLINICAL OUTCOME OF THE TOTAL KNEE ARTHROPLASTY

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Many orthopaedic surgeons avoid patellar resurfacing even in total knee arthroplasty (TKA) as they believe thinning patellar articular surface can lead to equally satisfactory results. The aim of our work was to analyze the impact of thinning patelloplasty on the clinical outcome of TKA. We analyzed a cohort of 107 patients with TKA (implant Genesis II) performed in 2005-2008. In the study group ($n = 59$) thinning patelloplasty was performed by removing entire patellar cartilage through tangential sawing whereby the convex shape of the original patellar facets remained unchanged. Control group ($n = 48$) consisted of age and gender matched individuals without patelloplasty. Clinical evaluation consisted of ROM measurements and standardized questionnaires KOOS / OKS / HSS. Radiologic evaluation of knees in lateral, axial (30 degrees) and long AP projection was made pre- and postoperatively. We measured indices of Insall-Salvati, Caton-Deschamps, axial patellar thickness, the congruence angle, the lateral patellofemoral angle, the angle between the anatomical and mechanical femoral axis and the angle between the femoral and the tibial mechanical axis. Clinical results in the study group (ROM, KOSS, OKS, HSS) were significantly better from the control group. None of the radiographic indices was significantly different between the two groups except for axial patellar thickness. We also found correlation between reduction in patellar thickness and improvement in clinical scores.

Abstract no.: 28115

**TREATMENT OF NON UNITED SCAPHOID FRACTURES BY
VASCULARISED GRAFT**

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The aim of this work was to evaluate the results of treatment of non united scaphoid fractures using vascularized bone graft from the dorsal aspect of the radius based on a pedicle from 1,2 intercompartmental supraretinacular artery (1,2I.C.S.R.A) Material: It consisted of 25 patients with non united scaphoid fractures. The average age was 31 years. The fracture involved the waist in 17 cases, the proximal pole in 7 and the distal pole in one patient. 14 patients received no treatment, 10 were treated in plaster cast and one patient was treated by open reduction and K wire fixation. The average pre-operative time was 32 months. Methods: Through a dorso-radial approach, a bone graft was harvested from the floor of the 2nd & 3rd extensor compartments on the radial styloid where the 1,2 ICSR artery lies, and the pedicle was traced to the radial artery. The site of non union was prepared where the graft was placed and fixed with K wires. A thumb spica was applied until union was achieved. The period of follow up ranged between 7 – 24 months with an average of 18 months. Results: The results were assessed using the scaphoid scoring system. Satisfactory results were obtained in 18 patients (72%) and unsatisfactory results in 7 cases (28%).

Abstract no.: 28123

A NEW RESECTION TECHNIQUE FOR PROXIMAL FIBULAR OSTEochondromAS

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We present a series of 6 cases of symptomatic proximal fibular osteochondroma. 4 cases were of solitary osteochondroma while 2 were secondary to hereditary multiple exostoses. Indication for surgery was peroneal nerve symptoms in 3, cosmesis in 1, restricted knee movements in 1, and pain in 1 case. All these cases were operated by a new resection technique where the head of fibula is preserved and the resection is more biological. The proximal tibio-fibular joint is preserved. Lateral constraints of the knee are left undisturbed, and hence do not need their repair. Complications occurred in 2 patients, 1 had marginal wound necrosis and 1 had persistent weakness of extensor hallucis longus. At a minimum follow-up of 3 years none had recurrence or late disruption of proximal tibio-fibular joint.

Abstract no.: 28135

INDICATIONS AND RESULTS OF THE RECONSTRUCTIONS BY ALLOGRAFTS: CRYOCONSERVED FEMORAL HEADS IN THE ORTHOPEDIC PATHOLOGIES

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INTRODUCTION: All the orthopedics department are confronted to situations of pathology requiring the reconstruction and bone repairs needing currently to the bone grafts for to fulfill the losses of bone or to the healing of shaft pseudarthrosis If the transplantation of auto graft remains the first choice for a lot of surgeons orthopedists, the taking of this graft type is not deprived of consequences and risks of complications for the patient. The use of these allograft increased considerably these last years and allowed to consider some more and more for daring reconstructions Banks of tissue are assigned to deliver these allografts They have for mission to assure the quality and the security of products Pathologies requiring reconstructions are frequent and we can mention reconstructions for total hip arthroplasty axial bone pseudarthrodeses segmental long bone reconstruction we have used in our experience femoral head appropriate on living donor and frozen: labeling, fichage: of the femoral head is mandatory for the period between April 2007 and December 2009 these femoral heads given by alive donors and preserved in a refrigerator at - 84 ° C by cryoconservation During this period we have counted 133 femoral heads whose living donors are: 85 female 48 male all presenting a fracture of the femoral neck type 3 and 4 of garden except 02 (coxarthrose) after receipt of results and serological result analysis: 55 femoral heads have been used at 40 patient, essentially presenting: Reconstruction for the hip 34 cas - filling of a cavity in a tumor 8 cases - parceled allografts graft 11 cases - . **RESULTS:** we study the indications for these allografts and their results the funding is less good for shaft bone and long bone. Conclusion: The use of allografts in orthopedic surgery permitted to reduce the use of autologous grafts

Abstract no.: 28138

**PRIMARY TOTAL HIP ARTHROPLASTY USING METASUL ANATOMICAL
POROUS REPLACEMENT (APR) CUP: TEN TO FIFTEEN YEARS
RESULTS**

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Background: Since merchandise of Anatomical Porous Replacement (APR) cup for Metasul was terminated in 2001 because of dislodgment of the liner, there are limited numbers of report focused to the result of total hip arthroplasty using this product. Therefore we performed a retrospective evaluation through minimum ten-year follow up.

Materials and Methods: From 1995 to 2000, thirty-four total hip arthroplasties with Metasul using APR cup were performed in our institution. After excluding deceased cases, we evaluated clinical and radiological outcome among eighteen hips. For the clinical evaluation, we used Japanese orthopedic association scoring system for hip (JOA hip score). **Results:** Eleven females and two males with an average age of 55 years at the surgery were included to the study. The mean duration of follow up was 136 months. Pre-operative diagnoses included osteoarthritis in eleven hips, rheumatoid arthritis in five hips and avascular necrosis in two hips. Seventeen femoral components were fixed with cement. JOA hip score was significantly improved, from 47.1/100 points preoperatively to 90.4/100points postoperatively. Five cases with complication were reported, including two dislodgment of the liner, one each case of dislocation, cup loosening or deep venous thrombosis. However, no stem loosening, deep infection or metal allergy was confirmed. During follow-up, two patients underwent revisions because of dissociation of the liner. No revisions were performed by the other reasons. In conclusion, our results of total hip arthroplasty with Metasul using an APR cup were favorable except for dislodgment of the liner.

Abstract no.: 28141

NETRIN-1 INHIBITS THE OSTEOBLASTIC DIFFERENTIATION

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Purpose: Netrin-1 belongs to a family of laminin-related secreted proteins that was discovered initially in the brain. It has crucial roles in nervous system development. The expression and functions of netrin-1 have been identified in many tissues. However, the role of netrin-1 in the osteoblastic differentiation has not been well elucidated. We herein report the role of netrin-1 in the osteoblastic differentiation. Materials and Methods: To investigate functions of netrin-1 on the osteoblastic differentiation, we examined the effects of netrin-1 on alkaline phosphatase (ALP) activity, gene expression of osteoblastic markers (ALP, osteocalcin (OCN), type I collagen (Col I))and osteoblastic transcriptional factors (Runx2, Osterix(OSX)) in mouse preosteoblastic cell line MC3T3-E1. Mineralization of extracellular matrix was also assayed. In addition to in vitro assays, we investigated the expression of netrin-1 in bone tissue. Results: The expression of netrin-1 and its receptors was detected in preosteoblastic MC3T3-E1 cells. Netrin-1 inhibited ALP activity and mRNA expression of ALP, OCN, Runx2, and Osx. Mineralization of extracellular matrix was also inhibited by the treatment of netrin-1. On the other hand, the expression of netrin-1 was detected in the periosteum and hypertropic chondrocytes in a mouse. Discussion: Our results indicate that netrin-1 might inhibit the osteoblastic differentiation. Considering the expression of it in bone tissues, it might have an important role in bone metabolism. Conclusion: We propose that Netrin-1 might regulate the osteoblastic differentiation. We are going to study signal transduction pathways of these phenomena.

Abstract no.: 28143

ARTHROSCOPIC SUB-ACROMIAL DECOMPRESSION

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Aim: The purpose of this study is to evaluate the result of arthroscopic sub acromial decompression in shoulder impingement Materials and methods: Thirty seven shoulders (20 right and 17 left) in Thirty five patients (12 women and 23 men) with shoulder impingement underwent arthroscopy by a single surgeon. The preoperative diagnosis was based on the clinical examination and MRI. Their mean age was 50 years (range 26–70 years), and the average follow-up was 31.1 months (range 2–60 months). If indicated, the performed arthroscopic decompression included acromioplasty, tenotomy of the long head of the biceps or distal clavicle resection. In all cases (100%) acromioplasties and in 4 cases (10.8%) biceps tenotomies and in 2 cases (5.4%) distal clavicle resection were performed. **Results:** The Constant and Murley Score improved by a mean of 35 points, from a mean of 34 points (range 24–58) preoperatively to a mean of 69 points (range 48–93) at the time of follow-up. Some 83.7% of the patients were satisfied with the procedure. The result was considered unsatisfactory because of inadequate pain relief in 2 shoulders, because of limited range of motion in 1 and because of change of job in 3 patients. **Conclusion:** Our early results suggest that arthroscopic subacromial decompression with or without Biceps tenotomy and/or distal clavicle resection is an excellent treatment for patients with shoulder impingement who did not respond to previous conservative treatment. However, its long-term consequences remain to be evaluated by studies with lengthy follow-up. Prognostic factors that may lead to a negative outcome are patient's demand, presence of rotator cuff tear, and presence of glenohumeral arthritis and decreased range of motion.

Abstract no.: 28145

**ENDOGENOUS AND EXOGENOUS BONE MORPHOGENETIC PROTEIN-2
PLAY AN IMPORTANT ROLE IN CHONDROCYTIC DIFFERENTIATION
AND MATURATION IN RAT CORD BLOOD-DERIVED MESENCHYMAL
PROGENITOR CELLS**

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Bone morphogenetic protein-2 (BMP-2) strongly induces chondrogenesis in the presence of transforming growth factor beta-1 (TGF-b1) or -3 in bone marrow (BM), synovium, adipose, and muscle-derived mesenchymal stem cells (MSCs). However, the effect of BMP-2 on umbilical cord derived (UCB)-derived MSCs, which are potentially useful for cartilage repair, has not been elucidated. In this study, the effect of endogenous and exogenous BMP-2 on rat umbilical cord blood-derived mesenchymal progenitor cells (UCB-MPCs) was evaluated. When cells were cultured in medium supplemented with only 10% FBS, type II procollagen (COL2A1) transcripts and collagen II protein were detectable after 2 weeks in UCB-MPCs, but not in BM-MPCs. The BMP antagonist, noggin, suppressed gene expression of COL2A1 and SOX-9 in UCB-MPCs. Exogenous BMP-2 promoted chondrogenic differentiation of UCB-MPCs in a dose-dependent manner, even in the absence of exogenous TGF-b1. UCB-MPCs expressed both type IIA and IIB procollagen in medium supplemented with only 10% FBS. Notably, exogenous BMP-2 was able to stimulate COL2A1 expression, particularly that of the type IIB transcripts, and also induce chondrogenic differentiation in rat UCB-MPCs. Interestingly, TGF-b1 inhibited BMP-2-induced COL2A1 splicing. As our results suggest that exogenous BMP-2 plays an important role for the spontaneous differentiation of chondrogenic lineages in rat UCB-MPCs, exogenous BMP-2 may effectively promote cartilage repair when UCB-MPCs are used.

Abstract no.: 28146

INFLUENCE OF INTRA-OPERATIVE JOINT GAP ON POST-OPERATIVE RANGE OF MOTION IN TOTAL KNEE ARTHROPLASTY – A PROSPECTIVE RANDOMIZED STUDY BETWEEN DIFFERENT PLATFORMS

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The objective of this study was to investigate the range of motion of the knee (ROM) before and 4 years after TKA with a mobile or fixed type platform and to prospectively evaluate whether there was a difference in ligament balance between the platform types. The subjects were 68 patients with 76 joints. The mobile type was used in 31 joints and fixed type in 45 joints by employing a prospective randomized method. The passive maximum ROM was measured using a goniometer before and 4 years after surgery. Also, the intra-operative knee ligament balance was measured. The postoperative extension ROM was significantly improved after TKA using a mobile type bearing compared with that employing a fixed type bearing. In TKA using the former, the intra-operative gap difference was not related to the postoperative flexion angle of the knee. However, they were related in TKA using a fixed type bearing, with a positive correlation regarding the flexion gap.

Abstract no.: 28147

IS CLINICAL CODING OF SHOULDER DAY CASE SURGERY ACCURATE?

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Aim: To assess the accuracy and best method of coding shoulder day case surgery.

Introduction: Payment by results (PbR) was introduced in the NHS to provide a transparent, rules-based system for paying trusts fairly, rather than being reliant on historic budgets and negotiating skills of managers. The cost depends on the procedure (OPCS 4.4) and diagnosis code (ICD 10) which are generated by coders, who traditionally have obtained the information from the notes. However, the introduction of Electronic Patient Records (EPR) has provided an alternative method of collecting patient data. **Method:** 50 shoulder surgery orthopaedic cases were chosen from 10 random days in September and October 2010. The procedure and diagnostic codes were collected retrospectively from the coding departments. We reviewed the notes, anaesthetic charts and EPR to collect clinical information. Diagnoses and co-morbidities were noted, and were subsequently passed to the clinical coders who re-coded the admissions. This was then compared to the financial values obtained by the clinical coders. **Results:** Of 50 procedures, 4 (8%) were uncoded by the coding department. There was concordance in 12 notes (24%). 11 (22%) had missing co-morbidities, however this did not affect the HRG code. In 23 cases (46%), at least one treatment, diagnosis or co-morbidity was missing, resulting in a different financial value. 5 resulted in differences of >£3,000, 5 of £1,000-2,000. All missed co-morbidities were found on the EPR and anaesthetic notes. Doctor's clerkings only had 70% of co-morbidities. **Discussion:** Coding for orthopaedic surgery is inaccurate, with HRG codes not truly reflecting the patient's clinical treatment or comorbidities. The combination of EPR and anaesthetic charts is identifies co-morbidities most effectively. Surgeons should headline the procedures undertaken to aid easy identification by the coders.

Abstract no.: 28149

SURGICAL TECHNIQUES TO PRESERVE THE SPINAL STABILITY IN MICROENDOSCOPIC LAMINOTOMY FOR LUMBAR SPINAL STENOSIS

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Introduction: Microendoscopic laminotomy (MEL) is bilateral decompression via unilateral approach using microendoscopic discectomy (MED) techniques. Although MEL can produce less biomechanical effect to the posterior structures of the lumbar spine, some authors have detected that the facet joint (FJ) on the approach side tend to be excessively resected in MEL.

Objectives: We conducted a comparative study to evaluate a modified surgical technique to preserve the spinal stability in MEL for lumbar spinal stenosis (LSS).

Methods: Thirty patients with LSS underwent MEL using a short scope with a high definition video system and several newly special-made curved instruments for MED. A control group consisted of initial 44 patients with LSS underwent MEL using an initial MED system and initial instruments. Radiographic evaluations related to a development of postoperative instability were conducted. The degree of surgical invasion on the FJ was evaluated using a modified Grobler method.

Results: Fractures of the inferior facet (IF) and postoperative instability were not observed in the latest group. In the control group, the fracture of the IF on the approach side occurred in 2 patients and postoperative instability developed in one.

Reduction rate of the FJ on the approach side was distinctly decreased from $20.5 \pm 22.4\%$ in the control group to $7.7 \pm 9.2\%$ in the latest group ($p=0.0003$).

Conclusion: The modified surgical technique for MEL could reduce the surgical invasion of the FJ on the approach side and preserve the posterior structures of the lumbar spine as much as possible.

Abstract no.: 28152

AN IMPROVED ACETABULAR CEMENTING TECHNIQUE USING HIGHLY ELASTIC SILICON RUBBER IN TOTAL HIP ARTHROPLASTY

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Background and purpose: In cemented total hip arthroplasty, higher strengths at the cement-bone interface can be achieved by cement penetration into cancellous bone. Our aim was to assess cement penetration modified acetabular cementing technique using highly elastic silicon rubber. **Patients and Methods:** We performed a retrospective study involving 100 total hip arthroplasty for osteoarthritis. Group 1 (50 hips) consisted of six men and 37 women (bilateral hips: 7cases) with a mean age of 65 years. This group underwent acetabular cement pressurization using standard acetabular pressurizer (DePuy ®) by operator before insertion of the acetabular component. The external diameter of the cup varied between 40 mm and 50 mm (mean 42.7mm). Group 2 (50 hips) consisted of eight men and 34 women (bilateral hips: 8 cases) with a mean age of 64 years. This group underwent acetabular cement pressurization using highly elastic silicon rubber and a separated pusher to apply pressurization force (JMM ®) by operator and assistant. Standard anteroposterior post-operative digital radiographs were reviewed to assess the penetration of cement into the acetabulum. The external diameter of the cup varied between 40 mm and 50 mm (mean 42.6mm). Cement penetration area was measured using AZE ® virtual place WS series version3. **Results:** Patients of group 2 had greater penetration of cement. The mean Cement penetration area of group 1 was 675mm²(SD 151). The mean Cement penetration area of group 2 was 806mm²(SD 179). **Conclusion:** Acetabular cementing technique using highly elastic silicon rubber significantly improved cement penetration.

Abstract no.: 28154

IN VIVO ANTIBACTERIAL ABILITY OF SILVER OXIDE-CONTAINING HYDROXYAPATITE COATING ON TITANIUM IMPLANTS IN THE RAT TIBIA MODEL

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Introduction: One of the serious postoperative complications associated with joint replacement is bacterial infection. To prevent bacterial infection related to the implantation, we have developed a novel antibacterial coating with silver-containing hydroxyapatite(Ag-HA) which shows the good biocompatibility and osteoconductivity, and reported the in vitro previous studies. The purpose of the present study is to evaluate the antibacterial activity against methicillin-resistant *Staphylococcus aureus* (MRSA) in the rat tibia model.

Materials and methods: Titanium implants sprayed HA or 3 wt% Ag-HA on the surface by the flame-spray technique were prepared (20mm in length and 1mm in diameter). Sixty-two, 10-week-old male Sprague-Dawley rats were prepared. A hole was drilled through the tibial tuberosity of the animals. 50µl of phosphate-buffered solution containing MRSA (102CFU/50µl) were injected and Ag-HA- or HA-coated samples were implanted into the medullary cavity of tibias. The animals were sacrificed and the tibias including implants were removed at 24h, 48h, and 72h after implantation surgery, then the number of inoculated viable cells was quantified by the agar plate method. **Results:** Mean number of viable MRSA on HA coating and Ag-HA coating were 2.5×10^4 CFU and 1.7×10^3 CFU at 24h, 6.6×10^4 CFU and 1.1×10^4 CFU at 48h, 2.2×10^5 CFU and 2.2×10^4 CFU at 72h, respectively. In each case, there were significant differences between HA coating and Ag-HA coating ($p < 0.05$). **Conclusion:** Ag-HA coating showed the inhibition of the bacterial growth in the rat tibia model.

Abstract no.: 28159

LUNATE ANTERIOR DISLOCATION

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Objectives: The incidence of wrist injuries is estimated around 2.5% of emergency room (ER) visits. Because wrist dislocations represent a small proportion of these cases, they can be easily missed on initial presentation. Lunate anterior dislocation (LAD) is the most common form of carpal dislocations. **Methods:** This case report concerns a 84 year-old man, run over by a car, with resulting facial, left hemithorax, left upper limb and right ankle trauma. He complained mainly of left wrist pain and functional impairment. At initial observation, there were no neurological or vascular complications. He was discharged by General Surgery and referred to Orthopaedics and Traumatology department, where he performed imagiological studies. **Results:** Radiographs showed fracture of the right fibular malleolus, fracture of the radial styloid process and anterior dislocation of the lunate, in the lateral view. On the anteroposterior view, the normal rectangular profile of the lunate was triangular due to his tilt. Prompt manipulative reduction followed by cast immobilization with slight flexion of the wrist was performed, under general anesthesia. No neurovascular compromise was detected after reduction. Post-operative x-rays confirmed the correct reduction. **Conclusion:** Cast immobilization should be maintained for a three week period. A possible complication of LAD is the acute compression of median nerve, which if prolonged can cause permanent palsy. Open reduction (OR) with combined dorsal and palmar approach may be required if manipulation fails. Proximal row carpectomy or arthrodesis may be necessary if LAD cannot be anatomically reduced by OR.

Abstract no.: 28163

ROUTINE ONE-STAGE EXCHANGE FOR INFECTED TOTAL KNEE ARTHROPLASTY

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INTRODUCTION: The treatment of an infected total knee replacement (TKR) involves typically the prosthesis exchange. The two-stage exchange is generally considered as the gold standard technique. However, our team uses a routine one-stage exchange for more than ten years. **MATERIAL-METHODS:** We analyzed all cases of infected TKR which were operated on in our department between 2004 und 2009. We collected 50 patients operated with a one-stage exchange, while only one case was operated on with a two-stage exchange because of multiple previous failures. The results have been analysed with a 2 year follow-up: healing or persistance of infection, clinical and functional evaluation with the Knee Society Score (KSS), X-ray analysis, complications and further revisions.

RESULTS: The infection was cured by 88% of the cases. The mean clinical KSS was 80 (10-100) points. The mean knee flexion was 97 (10-120) $^{\circ}$. The mean functional KSS was 69 (0-100) points. 60% of the patients were satisfied whith their result. The survival rate for beeing free of infection was 81% at 2 years. 3 cases had persistance of the initial infection, and were further treated by a repeated one-stage exchange (1 case), a two-stage exchange (1 case) or suppressive antibiotics (1 cases), all with a good result. 3 cases were cured of the initial infection, but experienced later a new infection with other pathogens. These cases were further treated by suppressive antibiotics (1 case), debridement (1 case) and and one-stage exchange (1 case), all with a good result.
DISCUSSION: This routine process of one-stage exchange without patient selection allowed us to obtain a high success rate. Our results compare favourably with these of already published two-stage exchange series. The clinical and functional results are probably better, and the patient does not experience the difficulties of the intermediate period of the two-stage procedure.

Abstract no.: 28164

**NAVIGATED, MOBILE BEARING TOTAL KNEE PROSTHESIS:
A MULTICENTRIC, PROSPECTIVE, 5-YEAR FOLLOW-UP STUDY**

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INTRODUCTION: In the present study, we wanted to test clinically the theoretic advantages of the three specific points of a new total knee replacement system (navigated implantation, mobile bearing and increased congruence) with a five-year clinical and radiological follow-up of a multicentric, prospective study. **MATERIAL AND METHODS:** 334 patients were operated on at our Departments with this TKR system between 2000 and 2002, and were prospectively followed to a five-year clinical and radiological follow-up. The clinical and functional results were evaluated according to the Knee Society Scoring System (KSS). The subjective results were analyzed with the Oxford Knee Score. The accuracy of implantation was assessed on post-operative long leg antero-posterior and lateral X-rays. The survival rate after 5 years was calculated according to the Kaplan-Meier technique. **RESULTS:** The mean clinical score was 87 points. The mean pain score was 43 points. The mean flexion angle was 118°, and 33% of the patients were able to reach 130° of knee flexion or more. The mean functional score was 70 points. The mean Oxford Score was 23 points. An optimal correction of the coronal leg axis (less than 3° off the neutral axis) was obtained in 87% of the cases. 67% of the cases had an optimal implantation of both tibial and femoral implants on both coronal and sagittal planes. The Kaplan-Meier survival rate was 97.4% after 5 years. **DISCUSSION:** The present study confirmed the efficiency of the navigation system used on the accuracy of implantation. The clinical and functional results after 5 years were at least as good as those published after conventional implantation of uncongruent prostheses. The survival rate was comparable as well to the already accepted gold standards. The mean flexion angle was better than the results we observed with the previously used fixed bearing system.

Abstract no.: 28166

THR COMPUTER ASSISTED SURGERY. RESULTS OF A RETRO AND PROSPECTIVE STUDY

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The aim of this study is to analyze the results obtained in 100 patients with a THR done with Computer Assisted Surgery. We have done a retro and prospective with a mean age of 67 years old. All the patients were operated by the same surgeon between year 2005 and 2008. Clinical and radiological findings (pre and post surgery) were studied prospectively (100 patients). No statistically differences according the complications and the length of hospital stay comparing with standard THR. As complications: one calcar split treated with a single cerclage wire and two navigations stops for technical problems. Postsurgical: during the first three months (2 dislocations, reduced under general anaesthesia + abduction hip brace), after three months (1 dislocation, revision surgery) and after one year (1 death: cerebral tumour (2 patients with a slight limping) 90 % of the patients were satisfied with the result of the surgery. A statistical analysis has been done between the similar results (implants sizes + leg lengthening) obtained with the Computer and the surgeon (templates-x-rays pre and post-op) measures. There was a difference pre and postop of a 10 % on the leg lengthening discrepancy. The computer calculates exactly the acetabular implant size in 73 % of the patients and with a difference smaller than 4 mm on the other 27 %. It calculates exactly the neck size on the 75 %. The exactly femoral implant size is calculated in 76 % of the patients and with a difference smaller than 4 mm on the other 23 %. The anteversion and lateralisation has been studied too showing an adequate implant orientation in the 93 % of the patients. This technique allows a better positioning of the implants and improves the reproducibility of the technique, but when the surgeon has a skilled experience the difference between those techniques isn't significant.

Abstract no.: 28169

IN VITRO SIMULATION OF ORTHOPAEDIC BIOPSY SAMPLING TO QUANTIFY THE RISK OF CROSS CONTAMINATION

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Aim: Over 140,000 hip/knee replacements are performed annually in the UK but infection remains a serious complication. Multiple samples are recommended for the diagnosis of prosthetic joint infection (PJI) but many surgeons may use single set of instruments to collect these samples. The aim of this in vitro study was to quantify the risk of cross contamination between samples during such a multiple sampling procedure. Method: In experiment 1, *Staphylococcus aureus* was diluted in sterile saline to achieve different concentrations (10¹ -10⁸). Known volumes of each bacterial suspension were spread uniformly on horse blood agar plates and were allowed to dry. Separate sterile Kocher's forceps were used to "biopsy" each of the inoculated plates, and were then used to "biopsy" four quadrants of an uninoculated agar plate sequentially. Plates were then incubated overnight at 37°C and examined for growth at each biopsy. The surface density (cfu/cm²) and bacterial load (cfu/ml) were calculated. This experiment was repeated for *Staph.epidermidis*, *Enterococcus faecalis* and *Escherichia coli*. The sampling procedure was standardized and each experiment was repeated twice to account for any variability in sampling. A second experiment was undertaken to assess cross contamination when plates inoculated with different organisms were sequentially "biopsied". Results: Experiment 1 demonstrated cross contamination to all four uninoculated quadrants when initial inoculum was >10⁴ cfu/cm². At inoculum <10⁴, cross contamination was variable. Experiment 2 showed that mixed bacteria can be transferred if single instrument was used to sample different organisms. Conclusion: Use of a single set of instruments to take multiple biopsies in patients with suspected PJI may result in cross contamination between samples potentially giving false positive culture results. The bacterial load in PJI is not known and warrants investigation.

Abstract no.: 28171

**PERIPROSTHETIC FRACTURES OF THE FEMUR IN HOSPITAL
ESPAÑOL DE MÉXICO AT 2 YEARS OF FOLLOW UP**

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Between March 2008 and March 2010, 20 patients with periprosthetic fractures of the femur after hip arthroplasty were treated using deep-frozen cortical strut allografts as an adjunct support after internal fixation or revision arthroplasty. According to the Vancouver classification system, there were 10 type B1, 3 type B2, 5 type B3 and 2 type C fractures. Seven patients had severe osteopenia, 10 patients had bone defects between 2 to 7 cm and 3 were associated with infection. Nine patients had internal fixation of the fracture using a compression plate, and 11 had revision arthroplasty using a long-stemmed femoral prosthesis. The average length of the allograft was 13.9 cm. At an average follow-up of 24 months, all the patients had a satisfactory functional result except one who had a leg length discrepancy of 6 cm due to multiple operations. There were no non-unions, malunions or infections. The fractures healed between 10 to 24 weeks (average, 15.6 weeks). In conclusion, a cortical strut allograft associated with internal fixation can be an effective method of treating periprosthetic fractures of the femur after hip arthroplasty.

Abstract no.: 28173

**COMPARISON BETWEEN PHYSIOTHERAPY VERSUS
CORTICOSTEROID INJECTION FOR TREATING SHOULDER
COMPLAINTS**

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Introduction: To compare the efficacy of physiotherapy and corticosteroid injection for treating patients with shoulder complaints in orthopaedic practice. **Material and Methods:** 198 patients with shoulder complaints, of whom 172 were divided, on the basis of physical examination, into two diagnostic groups: a shoulder girdle group ($n = 58$) and a synovial group ($n = 114$). Patients in the shoulder girdle group were randomised to physiotherapy, and patients in the synovial group were randomized to corticosteroid injection or physiotherapy. **Results:** In the shoulder girdle group duration of complaints was significantly shorter after physiotherapy ($P < 0.001$). In the synovial group duration of complaints was shortest after corticosteroid injection compared with physiotherapy ($P < 0.001$). Drop out due to treatment failure was low in the injection group (17%) and high in the physiotherapy group (51%). **Conclusions:** For treating shoulder girdle disorders physiotherapy seems to be the preferred treatment. For the synovial disorders, corticosteroid injection seems the best treatment.

Abstract no.: 28174

REVISION OF THE GUIDELINES TO PREVENT INFECTIONS IN PRIMARY HIP AND KNEE ARTHROPLASTY

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The most common organisms that cause deep wound infection are *S. aureus* and *S. epidermidis*. Preoperative bathing has been used to reduce the bacterial load of the skin prior to surgery because skin preparation immediately before surgery does not completely sterilize the skin. Antibiotics should be administered within sixty minutes prior to the incision and an additional intraoperative dose if the duration of the procedure exceeds one to two times the half-life of the antibiotic or if there is substantial blood loss during the procedure. The beta-lactams accomplish this by inhibiting cell wall synthesis and inducing cytolysis. Most of the prophylactic antibiotics used in orthopaedic surgery are categorized as bactericidal. The most important consideration in choosing an antibiotic for prophylaxis is its spectrum of action. While the chosen antibiotic may not cover the entire spectrum of organisms that may be encountered, it must be active against the bacteria that commonly cause postoperative infection. Other factors to consider include the pharmacokinetics and pharmacodynamics of the drug. Failure to maintain tissue concentrations of the drug above the minimum inhibitory concentration increases the risk of wound infection. The most commonly used antiseptic agents for surgical scrubbing include chlorhexidine gluconate, alcohol-based solutions, and iodophors such as povidone-iodine. Chlorhexidine gluconate acts to disrupt the cellular membranes of bacteria and is favored for its long-lasting activity against gram-positive and gram negative organisms found on human skin. The iodophors also act against common skin flora; however, their activity is much shorter than that of chlorhexidine gluconate. Furthermore, unlike chlorhexidine gluconate, the iodophors can be inactivated by blood or serum proteins and should be allowed to dry in order to maximize their antimicrobial action. Measures related to operative technique, as well as operating-room environment, have contributed to a reduction in infections.

Abstract no.: 28175

ASSESSMENT FOR THE MORPHOLOGICAL ABNORMALITIES OF ANTERIOR TALOFIBULAR LIGAMENT USING MR IMAGING IN CASES OF NEGLECTED LATERAL LIGAMENT DYSFUNCTION

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Background: In cases of neglected lateral instability of the ankle (LIA), reconstructive surgery using the remnant of anterior talofibular ligament (ATFL) is one of the choices for treatment. However, there remains some difficulty to assess the quality of the remnant. Recently, MRI is recognized as a valuable tool for assessing the quality of anterior cruciate ligament of the knee. The purpose of this study is to clarify the efficacy of MRI in the assessment for the morphological abnormalities of ATFL. **Materials and Methods:** 46 LIA patients (28 males and 18 females, mean ages 26 years) were included. In MRI examination, all feet were placed in the neutral position and axial plane that consisted of T2-weighted fast-spin echo sequences was obtained. The high intensity lesions in the ATFL bundle were regarded as abnormal. Ankle arthroscopy was used as the standard reference and the diagnostic criteria for determining the abnormal were as follows: completely covered with hypertrophic synovium and/or no ligament fiber, a partial or complete ligament tear with scar tissue, an avulsion at the fibular or talar attachment. **Results:** In MRI assessment, 16 cases showed high intensity lesion at fibular attachment only (group F), 24 showed at almost whole of the ATFL (group W), and 6 showed no abnormalities (group N). In arthroscopic assessment, the high intensity lesion of MRI showed partial or complete tear with scar and/or hypertrophic synovium around the attachment to fibula in group F, and completely covered with hypertrophic synovium and/or no ligament fiber in group W. No abnormality was shown in group N. **Conclusion:** In MRI examination, T2 high intensity lesion in ATFL showed the morphological abnormality with low quality of the ligament fiber. MRI examination was seemed to be useful for assessment of the morphological abnormalities of ATFL.

Abstract no.: 28177

IPSILATERAL FRACTURES OF THE FEMORAL NECK AND SHAFT

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Purpose: To analyze clinical data in cases of fracture of the femoral shaft with ipsilateral fracture of the femoral neck. **Materials and Methods:** We reviewed all cases of fractures of the femoral shaft and associated fractures of the femoral neck that were treated at Dankook Medical College Hospital from September 1995 to January 2008. The mechanism of injury, the time of diagnosis, the method of operation and the associated fracture were investigated. **Results:** All cases were traffic accidents (motorcycle 7, car 14). Fifteen (71%) patients were diagnosed while in preoperative care, while five (24%) cases were discovered in operative care. One patient (5%) was diagnosed during the postoperative period. Seventeen patients had fracture of the middle femoral shaft, and 4 patients had fracture of the distal femoral shaft. In the cases of femoral neck fracture, 4 patients were Garden stage I, 6 patients were Garden stage II, 8 cases were Garden stage III, and 4 cases were Garden stage IV. Twelve cases of the femoral shaft fracture used plate fixation, while 8 cases used dynamic hip screws; 4 cases of the femoral neck fracture used cannulated screws. Nine cases with femoral shaft fracture used intramuscular nailing; all cases with femoral neck fracture had cannulated screws. **Conclusion:** Femoral shaft fractures caused by high-energy trauma can be associated with ipsilateral femoral neck fractures, which can be initially overlooked. Therefore, greater caution should be taken during the patient's examination; the examination could include the addition of anteroposterior x-rays of the hip joint. Alternatively, a hip CT could be used, and then follow up x-rays could be taken.

Abstract no.: 28178

SURGICAL TREATMENT OF POSTTRAUMATIC DEFORMATIONS OF VERTEBRA

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Research objective is to study results and define surgical approach in treatment of old posttraumatic deformations of thoracolumbar spine. We made surgical treatment analysis of 23 patients with vertebra traumas (20 - 45 years). There were 17 men and 8 women. Thoracic spine injuries were observed at 4 patients, thoracolumbar spine – at 14, lumbar spine – at 5. According to the F. Denis classification (1983) 4 patients had type A fracture, 10 - type B, 9 - type C. 9 patients had posttraumatic kyphotic deformation of vertebra with deformation angle of 40-42 degree, 10 patients - 35 degree, 4 patients – 25 degree. The deficit of vertebral canal low than 35% was at 7 patients, low than 45% at 9, low than 60% at 3. The following radial research methods were carried out: spine radiography, myelography, computerized tomography, MR-imaging. Surgical treatment included 2 stages. Posterior spine fusion using transpedicular system was realized at the first stage. At the second stage after 2-4 weeks anterior corporodez with one or two segmental endofixative and implants of porous nikel of titan (cage) was executed. Good results were seen at 11 patients, satisfactory at 9, unsatisfactory at 3. Surgical treatment approach of old vertebra fractures claims an individual approach depending on terms of trauma. Surgical treatment should include 2 stages. At the first stage internal transpedicular fixation is fulfilled whereby it is possible to repair kyphotic deformation of vertebra, at the 2 stage corporodez is realized using modern cages for achieving blocking effect.

Abstract no.: 28179

**POSTERIOR EPIDURAL MIGRATED LUMBAR DISC FRAGMENTS
– REPORT OF FOUR CASES**

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Posterior epidural migration of lumbar disc fragments is a rare condition. In the best of our knowledge, surgical treatments were performed in all reported cases of posterior epidural migrated lumbar disc fragments. We described four cases of posterior epidural migrated lumbar disc fragments. These all cases were men, and 50-years old or more. The posterior epidural lesion was observed at the L2/3 in two cases, L3/4 in one and L4/5 in one. Surgical treatment was performed in a case who revealed progressive neurological deterioration, and the neurological symptoms were rapidly relieved after surgically removal of the fragments. Others underwent conservative treatment. Two of the cases showed a spontaneous regression of the lesion on the MR images at 3-month later with the relief of their symptoms. In the other case, the symptoms remained at the final follow-up. The posterior migrated disc fragments in the lumbar spine tend to be treated by surgical removal. However, the treatment for the lesion should be determined depending on the severity of the patient's symptoms because the posterior epidural migrated disc fragments have a possibility of spontaneous regression with time as well as common sequestered disc fragments.

Abstract no.: 28181

PAEDIATRIC PEDESTRIAN INJURY IN ILORIN, NIGERIA

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Background: Trauma is increasingly becoming a global disease burden, and by 2020 will be the second in Global burden of diseases in developing countries according to W.H.O. In developing countries the incidence of RTC involving vulnerable road users (pedestrian and cyclist) is much higher than the developing countries. More vulnerable amongst the pedestrians are the children and the elderly.

Objectives: The aim of this study is to determine the incidence and predisposing factors of pedestrian childhood injuries in our institution.

Methods: A prospective study of pediatric pedestrian injured presenting to the accident and emergency unit of unilorin teaching hospital between dec 2008 and nov 2009. Information obtained into predesigned proforma included patient biodata, cause and time of trauma, injury sustained, predisposing factors and outcome. Data was analysed using spss v 11.0 and significant factor determined using p value <0.05.

Results: There were 26 children with Pedestrian injuries constituting 39.4% of all pedestrian injured presenting to A/E during the period. There were 12 boys and 14 girls with median age of 10 (range 2-15). Twenty -one (80.8%) of all the pedestrian injured occurred on tarred roads and 19 (73.1%) occurred during the day light. Motor vehicle is the highest cause of injury, causing 12 (46.2%) cases and this is closely followed by motorcycle, occurring in 7 cases (26.9%). Most injuries are caused by over speeding 18 (69.2%). Fracture sustained were mainly in the lower limbs, 7 tibia, 11 femur (69.2%) and we recorded a fatality of 7.7%, 2 deaths.

Conclusions: Vulnerable road users, especially pedestrian children, need to be protected by laws enforcing pedestrian crossing, teaching children to cross highways, reducing speed limit of vehicles in pedestrian prone areas. Age focus education on the most vulnerable age group of 10yrs and 15yrs may reduce the incidence.

Abstract no.: 28184

PREOPERATIVE PLANNING OF TOTAL KNEE ARTHROPLASTY ON STANDING LONG X-RAY AP WEIGHT-BEARING VIEW

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INTRODUCTION: Malpositioning of total knee arthroplasty component during implantation is one of the main causes of implant failure. Preoperative planning by standing long X-ray AP weight-bearing view is one of the methods of improvement frontal plain alignment of total knee arthroplasty. **MATERIAL AND METHOD:** We retrospectively evaluated preoperative and postoperative long X-ray of 100 cases of total knee arthroplasty in our department. We measure angle between mechanical and anatomical femoral axis (IM angle), mechanical axis of lower limb, mechanical lateral distal femoral angle (mLDFA) and medial proximal tibial angle (MPTA). We consider angles in range 2 degrees from perfect alignment as good result. Group 1 consist of 50 cases of TKA implanted using data from preoperative planning and Group 2 consist of 50 cases without preoperative planning. **RESULTS:** Average IM angle of both group was 7,02 degree. In Group 1 average postoperative mLDFA was 90.08 degrees (81% good result), MPTA 89.60 degrees (89 % good result) and axis of lower limb 0.04 degrees (63% good result). In Group 2 average postoperative mLDFA was 89.94 degrees (83% good result), MPTA 88.91 degrees (56 % good result.), axis of lower limb 0.68 degrees (55% good result). **CONCLUSIONS:** By using preoperative planning on long X-ray we improve tibial alignment of TKA in frontal plain. Femoral alignment and overall mechanical axis of lower limb after implantation of TKA didn't change significantly.

Abstract no.: 28187

CONGENITAL PSEUDARTHROSIS OF THE TIBIA

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CPT is one of those rare conditions in which no individual surgeon is likely to accumulate enough material on which to base a statistically valid analysis [Nicoll, 1969]. We report a single author experience with the use of Ilizarov Method in treating 36 cases of CPT. Material & Methods: From 1992 till 2008, 40 cases with CPT were treated in our center. 4 cases were excluded due to inadequate follow up data. There were 25 males & 11 females. The left side was affected in 24 cases. Average age at operation was 9 years [9months -16.5years]. 25cases had previous operations. Neurofibromatosis was evident in 15 cases. Lower LL inequality ranged from to 2-17 cm in 31 cases preoperatively. Ankle stiffness was evident in 18 cases. One case had chronic osteomelitis & a discharging sinus as a complication of previous operations. All cases were treated using Ilizarov External Fixator. The patients were evaluated according to the method developed by Morrisy et al in 1981 depending upon the following parameters: union, functional activities, the need for support, LL inequality, axial deviation & satisfaction of the patient. Results: After an average follow up 6.5 years [2-11years], there were 22 good, 9 fair & 5 poor results. Union was achieved initially in all cases. Complications included: Somesort of pin tract infection in all cases, Refracture in 16 cases, Angulation at the site on nonunion in 11 cases. Conclusion: Ilizarov method has an important role in treatment of CPT. However, the problem of refracture has not been solved yet.

Abstract no.: 28192

PREVALENCE AND CHARACTERISTICS OF UNILATERAL KNEE OSTEOARTHRITIS

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Objective: To investigate the prevalence and characteristics of unilateral knee osteoarthritis (OA). **Methods:** We examined the inhabitants (aged ≥ 65 years) of Miyagawa village every 2 years between 1997 and 2009. Knee OA was defined as a Kellgren–Lawrence (K/L) grade of ≥ 2 . The 1223 inhabitants who participated in this study were classified into 3 groups on the basis of knee radiography results at the first examination (no OA (N group), unilateral knee OA (U group), and bilateral knee OA (B group)). The U group was subdivided into 2 groups: K/L grade II-I combination group (II-I group) and inhabitants without II-I combination (G>2 group). In order to investigate whether knee fractures influence unilateral knee OA, we determined the percentage of participants in each group who had a history of knee fracture. **Results:** The N, B, and U groups (II-I and G>2 groups) included 68.4%, 21.6%, and 10.0% (7.8% and 2.1%) subjects, respectively. Most of the subjects in the U group had a II-I combination (78.7%). The percentage of knee fracture was 3.3%, 5.3%, 6.3%, and 38.5% in the N, B, II-I, and G>2 groups, respectively. In the U group, 49.2% participants developed bilateral knee OA over 2~12 years (average, 5.3 (SD, 3.2) years). **Conclusion:** Our study results indicated that OA simultaneously advances in both the knees unless individuals have a history of knee injuries such as fractures.

Abstract no.: 28193

COSMETIC TIBIAL LENGTHENING

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Short stature may cause psychological disturbances mostly in early adolescence. We report a single author experience in bilateral tibial lengthening using Ilizarov principle to treat cases with short stature. MATERIAL & METHODS: 57 cases underwent bilateral tibial lengthening. 5 cases were excluded due to inadequate follow up data. Original height ranged from 134cm – 179cm. Age at operation ranged from 13y -44y. Follow-up – 1 year to 11 years. All patients discuss treatment with at least four patients, two who had completed lengthening & two undergoing treatment & had consultation with a psychotherapist before the operation. Evaluation • Radiological: Regenerate formation, Lengthening discrepancy, Deformity • Clinical: ROM of the knee & ankle, Return to functional activity, Satisfaction of the patient. Results: The lengthening achieved ranged from 5 to 13.5 cm [average 9.5 cm]. Healing Index 38 days/cm. Complications 1-Somesort of pin Tract Infection in all cases. Removal of K-wires due to persistence of infection in 7 cases. 2-Common Peroneal Nerve Palsy in one case .We retracted the Transfixing upper tibiofibular K-wire in this case. Then, gradual compression was applied followed by lower rate of distraction [0.5 mm per day]. Complete recovery occurs after 3 months. 3.Equinus deformity developed in 12 cases. 8 Cases responded to physiotherapy. 4 cases required TTA. 4. Residual recurvatum in one case. 5- Flexion Knee deformity in 11 cases which resolved within 6 months after fixator removal. 6-Fracture of the regenerate in 2 cases during the time of loosening the frame. 7- Fracture of the regenerate in 4 cases after fixator removal. Conclusion: Ilizarov method for cosmetic bone lengthening is an effective method as none of our cases required cancellous bone grafting. However, the patient has to know the possible complications before the operation, the treating surgeon must be familiar with fixator and experienced.

Abstract no.: 28206

MINIMAL INVASIVE OSTEOSYNTHESIS FOR THE ISOLATED RADIAL NECK FRACTURE IN ADULTS

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Radial neck fractures are found rarely in adults compared with the same fractures in children. Reports describing radial neck fractures often include radial head fractures perhaps giving an inaccurate picture of the amount of radial neck fractures sustained. Conservative treatments often lead to malunion in such dislocated fractures while open reduction treatment can lead to intra-articular calcification, avascular necrosis (a complication of this injury found particularly with children) and joint stiffness. Displaced radial neck fractures in adults are usually treated with an open surgical method while in children, after the publishing of Metaizeau's method in 1993, open methods are usually avoided. We present dislocated radial neck fractures in adult patients treated with a method of setting ESIN (elastic stable intramedullary nails) using TEN (titanium elastic nails). Isolated fractures of the radial neck in adults, with displacement, but not involving fracture to the radial head are presented. We show intramedullar osteosynthesis with TEN with various manipulations for reposition of the radial head without the need for open surgical methods, manual repositioning, or percutaneous repositioning. Postoperative results show the comparison to the healthy elbow, as well as results of other open surgical methods used to treat this fracture.

Abstract no.: 28208

THE PARADOX OF EDGE LOADING VERSUS WEAR FOR METAL ON POLYETHYLENE HIP ARTICULATIONS

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Edge loading is now recognized as an adverse factor that can negatively impact the outcomes of certain total hip replacements (THR). In some metal-on-metal THR, it can lead to ALVAL and even to “pseudotumor” formations. In some ceramic-on-ceramic THR, it can lead to squeaking and/or stripe wear. Edge wear in metal-on-metal and ceramic-on-ceramic THR can also be associated with accelerated wear of these joints. We examined the evidence in the literature for edge wear occurring in metal-on-polyethylene (MOP) THR and then assessed the evidence in the literature for data supporting the concept that edge wear in metal-on-polyethylene hip joints could accelerate wear over time. Extensive data in the literature confirm that edge wear is common in MOP THR. Surprisingly, no evidence exists that it accelerates wear. In fact, substantial data support the concept that it does not. These observations suggest that in terms of edge wear accelerating overall wear, MOP articulation may have a privileged position compared to hard-on-hard THR articulations.

Abstract no.: 28214

ASSOCIATED RISK FACTORS TO INCREASED RATE OF SURGICAL SITE INFECTIONS IN ORTHOPAEDIC ELECTIVE SURGERIES

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Background: Surgical site infections (SSI) represent 14-17% among nosocomial infections and 38% in surgical patients. This is a public health issue owing to the increasing hospital length stay, expenses and worsening of patients' prognosis. Mortality rate duplicates in comparison with patients without infections. The diagnosis and management of infections associated to orthopaedic procedures isn't well standardized due to lack of randomized studies. After reports of increasing incidence in SSI rate among patients operated by the departments of Orthopaedics and Neurosurgery in a General Hospital during six months, we aimed to discover the risk factors associated.

Patients and Methods: Patients who underwent elective surgery during 2009 first semester in the OR of a General Hospital were identified ($n=290$). Fourteen patients were excluded for having previous infections or open fractures. The diagnosis of SSI was made with clinical signs and symptoms and the presence of positive microbial cultures and in one case with a positive bone scan. Each variable was analyzed independently using the chi square test (IC 95%). To determinate the risk of infection a multiple regression analysis was used; only $p < 0.05$ were significant.

Results: Of the 276 final samples, 26 acquired SSI. The principal risk factor was the perioperative use of steroids, followed by urinary tract infections, length of procedure >120 minutes, and blood loss >900 ml. The use and quality of antibiotic prophylaxis didn't affect the outcome. The most common microorganisms found were coagulase-negative staphylococcus, gram negative bacillus such as *E. coli* and *P. aeruginosa* and *Staphylococcus aureus*.

Abstract no.: 28215

LATERAL-ENTRY CROSSED PIN FIXATION FOR SUPRACONDYLAR FRACTURES OF THE HUMERUS IN CHILDREN

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Although percutaneous pin fixation is currently a recommended treatment for displaced supracondylar fractures of the humerus in children, there has been controversy regarding the optimal pin configuration associated with risks of iatrogenic ulnar nerve injury and postoperative displacement. Here we present a technique for fracture reduction by percutaneous leverage method and lateral-entry cross pinning in the prone position. The first pin was inserted from the lateral and proximal aspect of a fracture line to the medial epicondyle. Then, the second pin was inserted from the capitulum to the medial cortex. This technique was performed in 14 elbows. There were 8 males and 6 females. Their average age at surgery was 5 years. Duration between injury and surgery averaged 3 days. There were 4 type II fractures, 6 type III fractures and 4 type IV fractures according to Gartland's classification system. There was no iatrogenic ulnar nerve injuries or ischemic complications. The Baumann angle averaged 16° (8-27°) and average humerocapitellar angle was 37° (16-47°) at the time of bone union. A comparison of postoperative and final radiographs showed no loss of reduction in any elbow. The average range of elbow motion was 7° in extension and 134° in flexion. There was no clinically evident cubitus varus and internally rotated deformity. The lateral-entry crossed pin fixation technique enables us to stabilize both lateral and medial pillars of the distal humerus. We recommend this technique because it is not only mechanically stable but also safe for ulnar nerve.

Abstract no.: 28217

OUTCOMES AFTER TREATMENT OF PERITROCHANTERIC FRACTURES: IS THE SLIDING MECHANISM OF HIP SCREWS AND HELICAL BLADES ESSENTIAL?

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Objectives: To evaluate radiographic failure of peritrochanteric fractures and consider technical problems and devices. **Methods:** Between January 2007 and October 2010, 308 patients with peritrochanteric fractures were treated. Ten patients were lost during the follow up and remained of 298 patients (240 women, 58 men; mean age 85 years; range 36 to 102 years) were included in this study. **Results:** Of 87 patients underwent compression hip screws (CHS), 136 underwent proximal femoral nail antirotation (PFNA), 67 underwent OM nail (Omic Corporation, Japan) and 8 were other intramedullary nails. Radiographic failure occurred in 14 cases (3.9%), two in CHS (2.3%), 8 in PFNA (5.9%) and 4 in OM nail (6.0%). According to the AO classification, 11 cases were stable fractures (3 A1.1, 4 A1.2, 4 A2.1) and 3 were unstable (2 A2.2, 1 A2.3). Four cases were apparently malreduction but other 10 were acceptable. Sliding firstly occurs in CHS and IM nails, secondly rotation or varus displacement and finally cutout. But 6 of 8 PFNA were central or distal migration of the blade and finally cutout. **Conclusion:** It is important to avoid malreduction or intramedullary type that allows excessive sliding (classification of Suzuki). Also we should consider of the devices. Although the failure pattern was different in hip screws and helical blade, the sliding mechanism is the common system and it may be a failure factor. To avoid mechanical failures, we think rigid fixation (compression the fracture and lock the screw or blade) is a choice.

Abstract no.: 28218

**POSTOPERATIVE ANALGESIA AFTER TOTAL HIP ARTHROPLASTY
WITH INTRA-ARTICULAR MULTIMODAL DRUG INJECTION**

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[Background] Good pain relief is important for postoperative hip rehabilitation, improves patient satisfaction. We investigated the analgesic effect of intra-articular multimodal drug injection in total hip arthroplasty. [Materials and Methods] Fifty-three patients undergoing total hip arthroplasty were randomized either to receive an intra-articular intraoperative injection containing bupivacain, epimorphine and epinephrine or to receive no injection. The postoperative analgesic regimen was standardized. All patients in both groups received patient-controlled analgesia for twenty-four hours after the operation, and this was followed by standard analgesia. Visual analog scores for pain was recorded postoperatively and at the twenty-four hours after the surgery. The consumption of patient-controlled analgesia at specific postoperative time-points and the overall analgesic requirement were measured. [Results] Patients who had received the intra-articular multimodal drug injection used significantly less patient-controlled analgesia at twenty-four hours after surgery. Additionally, they had lower visual analog scores for pain. No cardiac or central nervous system toxicity was observed. [Conclusions] Intraoperative intra-articular injection with multimodal drugs could significantly reduce the requirements for patient-controlled analgesia with no apparent risks following total hip arthroplasty.

Abstract no.: 28219

GAIT MODIFICATIONS TO UNLOAD THE HIP IN CHILDREN WITH LEGG-CALVÉ-PERTHES DISEASE

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Avascular necrosis of the femoral head in children with Legg-Calv  -Perthes disease (LCP) severely limits the range of motion of the hip joint, hindering a normal gait. To assess loading of the hip joint, forty children with unilateral LCP were divided into three groups based on the time base integral of the hip abductor moments during single stance on the affected side acquired during the gait analysis. X-rays of the affected hip were classified according to Herring, Caterall and Waldenstr  m. The time base integral of the hip abductor moments during single stance correlated positively with the hip abduction angle and age but only a weak positive correlation was found with X-ray classifications of Herring and Caterall. Children who were able to unload the hip joint spontaneously adopted a Duchenne-like gait with hip abduction and external rotation during the single support phase. The patients who loaded their hips normally also showed a Duchenne-like pelvis elevation and the position of the hip in the frontal plane was neutral. In the group of children who over-loaded their hips, a pelvis drop to the swinging limb at the beginning of stance (Trendelenburg sign) was accompanied by prolonged hip adduction during stance. Such a walking pattern should be avoided in children with LCP. On the other hand, the gait pattern characteristic of the hip unloading group has proven to be efficient in adults with early coxarthrosis. It is recommended that gait training be an integral component of conservative treatment in children with LCP.

Abstract no.: 28222

THE ROLE OF SUV ON FDG-PET FOR EVALUATING MUSCULOSKELETAL LESION

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Purpose: FDG-PET is increasingly used for the diagnosis and management of patients with sarcomas, such as grading, staging, and monitoring. The purpose of this study was to evaluate the role of SUV on FDG-PET in musculoskeletal tumors. Methods: Among 212 patients with musculoskeletal lesions treated in our department between 2005 and 2011, FDG-PET was performed before surgery in 163 site (163patients) which histologically proven musculoskeletal tumors. The patients consisted of 89 males and 74 females. The standardized uptake value (SUV) was compared between benign and malignant lesions, and among different histological subgroups. Results: The average of SUV in total lesions was 5.2 ± 4.6 . There was a statistically significant difference in SUV between benign (3.1 ± 2.6) and malignant lesions (5.5 ± 4.8). However, considerable overlap in SUV was observed between many benign and malignant lesions. The SUV of main subgroup was liposarcomas (3.8 ± 3.0), osteosarcoma (5.8 ± 4.1), hematopoietic tumor (12.0 ± 8.4), and neurogenic tumor (5.2 ± 3.2). Discussion: In this study, significance was elucidated between benign and malignant lesions. The previous article suggested cut off point (SUV=2.0) was useful in recommended to distinguish between benign and malignant tumor, but FDG-PET only reflects the uptake of glucose metabolism but does not always show the aggressive behavior. Some benign tumors demonstrated high uptake of glucose metabolism. In practical use, only SUV on FDG-PET is limited to differentiating benign from malignant musculoskeletal lesions.

Abstract no.: 28223

STUDY OF CEMENTED HEMIARTHROPLASTY AS A PRIMARY METHOD OF TREATMENT IN INTERTROCHANTERIC FRACTURES IN THE ELDERLY

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Intertrochanteric fractures of the femur are a major cause of morbidity and mortality in the elderly. Traditional fixation with dynamic hip screw (DHS) leads to complications like screw cut-out due to poor bone stock. We evaluated the use of cemented hemiarthroplasty as a primary mode of treatment in such fracturers, which minimizes the chances of failure. Hemiarthroplasty is an attractive option, but the loss of calcar usually makes the outcome uncertain. We have three methods of reconstruction of calcar to overcome this problem. Once the calcar is reconstructed, the chances of success of cemented hemiarthroplasty increase manifold. Also, due to secure bonding interface between the stem and the femoral canal, which may be unduly wide in this geriatric population, we can make the patients ambulatory early, which is imperative in this fracture type, and more so in this age group. The study of cemented hemiarthroplasty with or without calcar reconstruction in the geriatric population is discussed in this paper.

Abstract no.: 28224

STUDY OF USE OF OPPOSITE-SIDE DISTAL FEMORAL PLATE IN REVERSE-MODE IN SEVERELY COMMINUTED INTERTROCHANTERIC FRACTURES

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The fractures of the proximal femur, and especially intertrochanteric region, are a common occurrence in our everyday practice. The choice of treatment in most centres is open reduction and internal fixation with a Dynamic Hip Screw (DHS). This time-tested method gives consistently good clinical and radiological results. However, in certain cases where there is comminution of the lateral cortex, the insertion of DHS becomes not only difficult, but also unwise. Various forms of other methods of fixation are available for such cases, such as contoured proximal femoral plates. We use the opposite-side distal femoral plate in reverse fashion in such cases as it gives us adequate purchase of good-quality bone in the neck of femur in both sagittal as well as coronal planes. The patients do well post-surgery. The need for bone graft is practically obliterated and the fractures go on to heal uneventfully. This unconventional method of fixation nonetheless produces consistent results in this very common fracture in our clinical practice, and the outcome of severely comminuted intertrochanteric fractures treated by opposite-side distal femoral plate used in reverse configuration is studied in this paper.

Abstract no.: 28226

A RARE PRESENTATION OF DWARF

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A 7-year-old male child presented with complaints of short stature and bowing of both legs. The Child was treated elsewhere by different modalities, including non-allopathic medicine, and was referred here for management of the aforementioned problem. Parameters of investigations for dwarfism raised clinical suspicion of Achondroplasia. The lab investigations, however, revealed that the child is suffering from chronic compensated metabolic acidosis; Urine pH was 5.6 with growth failure. Differentials considered were Achondroplasia, Metaphyseal Chondrodysplasia, Pseudochondroplasia and Renal Rickets. After confirming the diagnosis of Achondroplasia by the classic findings in radiological examination, the patient has been managed by stapling of the lateral epiphyses of both knees & derotation osteotomy, & was followed up with Knee Brace. Genu Varum has been corrected from 7.9 cm to 3.2 cm & the child has gained 5 cm of height, and is now walking independently with full Range of Motion at both Knees & Ankles. The diagnostic dilemma and the subsequent treatment of the patient have been discussed in this paper.

Abstract no.: 28232

COMPARISON OF ANTEROLATERAL AND POSTEROLATERAL APPROACH IN MINIMALLY INVASIVE TOTAL HIP ARTHROPLASTY

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Summary: We reviewed the early results of two techniques involving anterolateral (AL) total hip arthroplasty (THA) and posterolateral (PL) THA. There was no significant difference on cup and stem positioning between two approaches. **Methods:** 200 consecutive patients were assigned to two groups; specifically, minimally invasive AL-THA (100 patients) and PL-THA (100 patients). Clinical data that were obtained for the two groups of patients included age, gender, body mass index, side of involvement, intraoperative blood loss, and postoperative complications. Radiographic data were obtained from a single postoperative anteroposterior radiograph of the pelvis and included the cup inclination angle, cup anteversion angle, and the alignment of the femoral stem. Malpositioning of the femoral stem was considered to be present when the longitudinal axis of the stem was tilted in more than 5° relative to the diaphyseal axis of the femur. **Results:** The mean cup inclination angle was 42.8° and 43.9° for AL-THA and PL-THA, respectively ($p=0.01$). The mean cup anteversion angle was 18.6° and 20.6° for AL-THA and PL-THA, respectively ($p=0.01$). The number of malpositioning of the femoral stems were 5 and 8 for AL-THA and PL-THA, respectively ($p=0.01$). The mean blood loss during the surgery was 577.1 ml and 351.0ml for AL-THA and PL-THA, respectively ($p=0.01$). **Conclusion:** There was no significant difference on cup inclination angle, cup anteversion angle and the stem alignment of positioning between two approaches. However, the amount of blood loss was significantly greater for AL-THA group.

Abstract no.: 28237

INDICATION AND RESULTS OF HINGED KNEE PROSTHESIS OF AGGRESSIVE AND MALIGNANT TUMOR AROUND THE KNEE JOINT

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Introduction: one of the problems for treatment of malignant tumor of around the knee joint is that the patient needs some chemotherapy and radiotherapy .in the second step the treatment is amputation or limb saving during the last decade the result of limb saving in comparison with amputation was the same or if neurovascular is intact and CT scan of the chest shows no metastasis limb salvage is better in this study we are trying to explain the result of limb salvage and using hinge knee prosthesis in the cases osteosarcoma
Material and method: during last five years we had 14 cases of osteosarcoma around the knee joint the age of the patient has been between 23 to 44 years old .we had 8 case female and 6 cases male in our series in 9 cases the lesion was in distal part of femur and proximal part of tibia. In all the cases we did CT scan, WBBS, MRI for the patients and then open biopsy and after confirming the diagnosis of osteosarcoma we did adjuvant therapy for 3 times in different occasions. We had a second look at the lesion to know the percent of tumoral necrosis and then we approach to limb salvage and completely resected the tumor with the host using hinge prosthesis in the cases of OS which involve proximal part of tibia we sacrificed it completely with repair of patellar tendon with prosthesis and soft tissue all of the cases then were sent to oncology department for continuing chemotherapy
Results: we had 2 cases of recurrence of OS tumor with expansion in posterior compartment of the knee and also proximal part of prosthesis the ROM was 81 -90 degree inflexion and 0 -5 in extension lock approximately in 2 years survival was excellent.

Abstract no.: 28240

USE OF PRE-FABRICATED, INSTANT FIT ORTHOSES IN SURGICAL CAMPS

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From August 2004 to March 2008, we have done 22 surgical camps for deformity correction at different places countrywide. In surgical camps, deformity correction and immobilization by plaster cast is routine method followed by a follow-up after about four weeks for removal of sutures/ plaster & provision of orthosis. We used this technique in majority of our cases in camps however a new technique developed in our institute i.e. "corrective surgery and immediate fitment of orthosis" by means of pre-fabricated orthosis, was also utilized, wherever feasible. Total 1026 cases were benefited by surgery through these camps, out of which we used this new technique in 236 cases of lower limb deformity. Average 25-40 patients were operated in majority of the camps with hospital stay of 2-5 days. Follow-up was done for each camp after about 4-6 weeks of surgery for removal of sutures and readjustment of already fitted orthosis. Systematic implementation of camp approach is found to be successful to provide mass rehabilitation & use of pre-fabricated orthosis, immediately after surgery in these camps reduces the cost markedly. The result of this new technique is highly satisfactory, encouraging and found to be highly cost-effective.

KEY WORDS: Surgical Camp, Prefabricated Orthosis, Locomotor disability.

Abstract no.: 28245

BIOMECHANICAL STUDY IN UNSTABLE 3 PART INTERTROCHANTERIC FRACTURES; STABILITY BY VOLUME OF FRAGMENTS

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Purpose: To analyze the mechanical stability of 3 part intertrochanteric fracture fixed with dynamic compression hip screw in experimental model under cyclic loading according to volume of fragments. **Material & Methods:** We made 16 specimens (devided to 4 groups ; group 1 – large GT, small LT; group 2 – large GT, large LT; group 3 – small GT, small LT; group 4 - small GT, large LT) with 3 part intertrochanteric fractures from artificial bone. We performed 3D CT scanning for each fragments and measured the volume of each fragments. After fixation with dynamic hip screw, 3Hz cyclic loading was performed by MTS 858 bionix. A survival analysis was performed on the cycles to onset of failure. **Results:** The mean volume of specimens that include from apex of greater trochanter) to distal 7cm was 144.9 ± 7.3 cm³ and HN was 98.7 ± 15.6 cm³, LT was 4.8 ± 1.0 cm³, GT was 42.1 ± 6.5 cm³. Average of cycles in 200~2000N until occurrence of fixation failure are 1467.5 ± 265.5 (group 1), 495 ± 22 (group 2), 383 ± 34 (group 3), 255 ± 33 (group 4). **Conclusion:** In unstable 3 part intertrochanteric fracture, the size of GT as well as the size of LT is an important indicator for stability after DCS fixation. This biomechanical study supports our hypothesis that the ratio of LT/GT varies inversely as intrinsic stability.

Abstract no.: 28246

KNEE HYPEREXTENSION AND POSTOPERATIVE KNEE LAXITY AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

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Knee hyperextension is a risk factor for anterior cruciate ligament (ACL) reconstruction failure. The sagittal geometry of the knee in full extension was studied to determine factors affecting stability following reconstruction. Methods: One year after ACL reconstruction, a true lateral view of the knee in full extension was acquired using a fluoroscope in our series of 33 males and 40 females. Two angles were measured. The angle between the femoral axis and tibial axis was measured and designated the extension angle; and then the roof plateau angle between the intercondylar roof and a line tangent to the concave profile of the medial tibial plateau was measured. Anterior laxity was measured on anterior stress radiographs using the telos device. Results: Residual anterior laxity determined by telos one year postoperatively was 2.6mm in females and 2.5mm in males. In females, knees with a residual anterior laxity of 3mm or more showed larger extension angles and larger roof plateau angles than knees with residual anterior laxity less than 3mm. The extension angle correlated with the roof plateau angle ($R=0.52$), indicating that knees with hyperextension also showed a vertical position of the femoral roof in relation to the tibial plateau. These relationships were not seen in males. Conclusions: In females, knees with hyperextension showed increased knee laxity compared to that in knees without hyperextension. A vertical position of the femoral roof produces a relatively vertical graft placement and may reduce postoperative stability.

Abstract no.: 28249

**TREATMENT OF FEMORAL INTERTROCHANTERIC FRACTURE
TREATED BY HEMIARTHROPLASTY – CEMENTED VS CEMENTLESS
FIXATION**

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Purpose: We compared the clinical results of cemented and cementless bipolar hemiarthroplasties in treatment of unstable intertrochanteric fractures of the femur in elderly patients. **Material & Methods:** From March 2004 to February 2008, we performed consecutive 87 cemented (group 1, 41 patients) and cementless (group 2, 46 patients) bipolar hemiarthroplasties for intertrochanteric fractures in patients more than 70 yrs old. The average age of patients was 77.3 (70-103). The mean follow-up period was 14.2 (11-37) months. We compared mean hospital stay, the amount of postop. bleeding, the mortality rate within 1 year, systemic & surgical complications, and functional mobilities by modified Koval classification between two groups. **Results:** Better ambulatory mobility was shown in group 1 than group 2 during postoperative 3 months ($p < 0.05$). The mean operation time in group 1 was longer than in group 2. The incidence of pulmonary embolism was frequent in group 1 than in group 2. The mortality rate within 1 year was 19.5% in group 1 and 17.4% in group 2($p = 0.15$). There were no difference in mean hospital stay, the postoperative blood loss, and ambulatory ability at postop. 1 year between two groups. **Conclusion:** Patients with cemented implant has improved postoperative pain relief and better ambulatory ability at early postoperative period than patients with cementless implant. Also, the operation time and the incidence of nonfatal pulmonary embolism were higher in cemented group. However, there was no difference in mortality rate, duration of hospitalization, the incidence of postop. complications, or ambulatory ability at postoperative one year.

Abstract no.: 28250

**TREATMENT OF SUBTROCHANERIC NONUNION OF THE FEMUR
– WHETHER TO LEAVE OR TO EXCHANGE THE PREVIOUS HARDWARE**

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Purpose: We compared the clinical results by two methods of leaving the previous hardware with an additional fixation and exchanging the previous hardware in treatment of aseptic subtrochanteric non-union. **Materials and Methods:** From February 2002 to December 2008, we reviewed 19 cases of subtrochanteric non-union treated with plate or intramedullary nailing retrospectively. The clinical results in ten cases (group 1) of exchanging the previous hardware were compared with nine cases (group 2) of retaining the previous hardware with an additional fixation by plate or wiring. Average age of patient was 52.1 (33-59) in group 1 and 49.4 (26-70) in group 2. Average follow-up period was 11.3 (5-27) months. Revision operation was performed at 9.3 ± 4.1 months in group 1 and 8.4 ± 3.8 months in group 2 from initial operation. Average number of previous operation was 2.1 in group and 1.6 in group 2. **Results:** The union rate was nine in ten patients (90.0%) in group 1 and six in nine patients in group 2(66.7%) ($p < 0.05$). The clinical result in group 1 with exchanging the previous hardware with or without bone grafting was superior to group 2 with leaving the previous hardware with an additional fixation with or without bone grafting. Average shortening was 2.2 ± 0.9 cm in group 1 and 1.3 ± 0.5 cm in group 2. **Conclusion:** The clinical result of exchanging the previous hardware was better than leaving the previous hardware in treatment of aseptic subtrochanteric non-union by accessing complete removal of interposed fibrous tissue and meticulous bone grafting lead to biologic environment to achieve a bony union.

Abstract no.: 28252

**LONG-TERM RESULTS OF SECOND GENERATION CEMENTLESS
TOTAL HIP ARTHROPLASTY**

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INTRODUCTION: The purpose of the present study was to evaluate long-term results of second generation cementless total hip arthroplasty with a minimum follow-up of 10 years.

MATERIALS AND METHODS: We retrospectively reviewed the clinical and radiographic results for 31 patients (41 hips) who underwent second generation cementless total hip arthroplasty for the treatment of secondary osteoarthritis of the hip between November 1991 and May 1997. There were 7 men (8 hips) and 24 women (33 hips). The mean age at the time of the surgery was 54 years (20-72 years) with the mean follow-up of 13.5 years (11-19 years). Twenty hips were used anatomic stem/Harris Galante porous II (HGPII) and 21 hips were porous-coated anatomic (PCA). **RESULTS:** The mean Japanese Orthopaedic Association score significantly improved from 44 to 83 points. Postoperative complications occurred in 3 patients (Infection, dislocation, major trochanter fracture). At the radiological findings, 14 hips (34%) had osteolysis in the calcar femorale and 8 hips (20%) had acetabular osteolysis. Radiolucent lines were present in 6 hips (14%) in the femoral side and 12 hips (29%) in acetabular side. All of the femoral components exhibited radiological evidence of bone ingrowth at the last follow-up. There was aseptic loosening of the acetabular components in 10 hips. Seven hips underwent acetabular revision, but no femoral component was revised for any reason. **CONCLUSIONS:** This study showed good long-term results of second generation cementless total hip arthroplasty in femoral components, while acetabular revision underwent in 7 hips. Further observation was required.

Abstract no.: 28254

LOW BACK PAIN IN SWIMMERS

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INTRODUCTION: Causes of mechanical low back pain (LBP) generally are attributed to an acute traumatic event, but they may also include cumulative trauma as an etiology. The pathophysiology of mechanical LBP remains complex and multifaceted. Multiple anatomic structures and elements of the lumbar spine (eg, bones, ligaments, tendons, disks, muscle) are all suspected to have a role. One of them can be Myofascial Trigger Points.

MATERIAL AND METHODS: Non experimental study of approaching to reality and of descriptive type of 37 freestyle swimmers who presented low backache that s/he is not aware of any particular activity that aggravates the pain and negative diagnostic procedures, in one year period. We used the MTP diagnostic clinical criteria proposed by Travell and Simons, exploratory tests and to have press down hard on the iliac crests.

RESULTS: 37 swimmers: 20 men and 17 women. All cases presented the MTP essential diagnostic criteria and pain or sensitive alteration when pressing lower MTP in latissimus dorsi. Pain due to these MTP may be elicited by both exploratory tests and were suspected when the patient stretched upward and far out in front of him/her.

DISCUSSION
We do not agree with Dittrich when he attributes low back pain to tears and fibrous tissue pathology of the lumbodorsal fascia and subfascial fat. We coincide with Greenman that latissimus dorsi MTP can be distinguished of quadratum lumborum MTP as low back pain responsible by standing-flexion test and seated-flexion test. We coincide with all consulted studies in the idoneity of the essential diagnosis criteria and the specificity which provide the confirmatory observations.

CONCLUSION: The patient is unaware of the slightly restricted range of motion in his/her daily life until the MTP are sufficiently active to cause an enigmatic persistent low backache at rest after the activity has ended.

Abstract no.: 28256

RANDOMISED CONTROLLED TRIAL TO COMPARE THE QUALITY OF FEMORAL CANAL CEMENTATION, USING TWO FEMORAL CEMENTING TECHNIQUES

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Introduction: Techniques for femoral canal cementation in hip arthroplasties have evolved to improve the quality of cementation, with variable survivorship reported in literature. We have conducted a randomised controlled trial comparing quality of femoral canal cementation, using two femoral cementing techniques. **Method:** From September 2007 to April 2009, a randomised controlled trial was conducted involving thirty cases of various hip disorders that were operated for cemented hip hemi-arthroplasty/ total hip arthroplasty. The study was conducted in two prospective groups after randomisation. Cases undergone hip arthroplasty with femoral cementation using hand-packing technique in group I ($n=15$) and those in group II with retrograde gun injection technique ($n=15$), with other parts of the procedure (i.e. medullary plugging, centralization and femoral pressurization) remaining same. Immediate postoperative radiographs were obtained of both the groups and the quality of femoral canal cementation was evaluated by a criterion given by Barrack et al in all the fourteen Gruen's zones (seven zones on anteroposterior view and additional seven on lateral view). **Results:** In our study, Fisher's exact test used for comparing both the femoral cementation techniques did not show any difference in the quality of femoral cementation (p value=0.710). **Conclusion:** On the basis of our study, we can safely conclude that after thorough femoral canal preparation, same quality of cementation can be obtained by either technique, in spite of the extra costs incurred with gun-packing technique due to extra gadgets.

Abstract no.: 28258

RADIOLOGICAL METHODS IN DIAGNOSTICS OF TRAUMAS

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Methods: This work is based on the analysis of 112 supervisions with the complicated damages of toracolumbar department of the backbone, was on treatment in scientist neurosurgery centre of Uzbekistan during with 1988 for 2010 the age of patients changed from 11 till 65 years; from them men was-86 and women-26. **Results:** In our researches survey a X-ray pictures are lead 112 patients. Mielography it is carried out 54 patients with use omnipak or ultrawhist on a standard procedure. Mielography it was spent on the device of firm Siemens (Multistar) in standard projections, in 39 cases it was carried out interoperation. The magnetic resonant tomography was spent on the device of firms «Magnetom Open Viva» (Siemens) by capacity of a magnetic field 0,2 tesla on standard procedures in T1 and T2 modes. It is made in 16 cases. The computer tomography is made in 22 cases, in the sharp period of a trauma allowed to study anatomy topographical features of a spatial arrangement of neurovascular formations on vertebrae and radicular channels. **Conclusions:** The received results of research have shown, that diagnostics of a level and character of defeat of a backbone, a spinal cord and its radicular is possible only on the basis of the diagnostic complex including careful neurologic inspection and radiological investigative techniques, as well as data of a computer and magnetic resonant tomography.

Abstract no.: 28260

WOUNDS CAUSED BY ABDUCTION BRACES AMONG CLUBFOOT CASES

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Ponseti's method is highly effective for the treatment of clubfoot. Using an abduction brace for 3-5 years is mandatory for maintaining the correction achieved by serial casting. In this presentation we describe our experience with wounds caused by abduction braces, discuss their etiologys and the way of treatment. Four patients (unilateral clubfoot) sustained wounds at the posterior aspect of the heel in 6 feet at a mean age 6 weeks. All patients completed serial casting and their feet were braced with an abduction brace. In two patients both feet were involved. The wounds appeared in 2 clubfeet and in 4 healthy feet. Attempts to heal the wounds while sustaining the abduction device failed. All wounds healed under local antibiotic treatment, temporary ceasing of brace treatment, recasting until full healing of the wound and only then applying an abduction brace again. All patients maintained good correction of the clubfoot at a mean follow up of 13 months (7-25 months). We assume that the wounds etiology was motion of the ankle joint inside the shoe causing rubbing of the heel posteriorly and bruising of the delicate baby's skin. Our recommendation is to use the smallest size shoes possible to prevent motion of the ankle joint inside the shoe. Parents should be advised to check the feet for wounds; once a wound appears, using the brace should be stopped immediately. Rebracing should be encouraged only after complete healing of the wounds.

Abstract no.: 28263

PRIMARY REATTACHMENT/REPAIR OF LIGAMENTS OF KNEE

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Background: Injury to knee ligaments is very common and quite handicapping for the patients who are often young and active in sports. **Clinical material:** During the period 1974-2010, 84 patients (78 male and 6 female) with average age of 28 (range 19-44 years) were operated upon for single or multiple ligamentous injury. One ligament was injured in 30, 2 in 28, 3 in 18 and 4 in 16 (who had dislocation of the knee). There was associated fracture of ipsilateral femur in 7 and tibia in 4. Ovulsion of quadriceps extension, posterior capsule was detached in 9, dislocation of knee was 16. Nine patients had injury to other parts of the body. The ligaments were either reattached to the point from where they were avulsed or mid substance repair of the ruptured collateral ligament were done by open procedure. **Results:** The patients were followed up for a period of 1 to 30 years (average 12 years). All the patients have stable walking on smooth ground. 78 can walk on even uneven surface. 16 can run and are participating in games, 3 are jumpers. Secondary osteoarthritis has set in 32 patients who have been followed up for more than 10 years. **Conclusion and Relevance:** Primary repair/reattachment of injured knee ligaments by open procedures gives satisfactory results. The procedure can be carried out by general orthopaedic surgeon not trained in arthroscopy and where such facilities are not available (in many centres in developing countries).

Abstract no.: 28266

JUDET QUADRICEPSPLASTY EXPERIENCE AND NEW TIPS

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Introduction: Extension contracture of the knee & inability to flex it as usual is a rare problem that could happen after trauma, operation or after application of external fixation in a non proper way. It could happen due to tethering the vastus intermedius muscle and locking its sliding mechanism over the Femoral bone. **Aim of the study:** To evaluate a new technique that decrease incidence of recurrence of adhesions after Judet Quadricepsplasty done for extension contracture with failure of physiotherapy for twelve months to solve the problem. **Materials and Methods:** 7 cases of knee extension contracture after Ilizarov that applied in other hospitals than ours were treated by Judet quadricepsplasty. There was 6 males and 1 female mean age was 24 (range from 15 to 41). Ilizarov frame was applied for femoral lengthening in all cases; 1 case had congenital short femur, 2 cases had femoral shortening due to fracture complications; 1 case due to malunion with shortening and 3 cases were after pelvic support osteotomy operation. Patients were operated upon by modified Judet quadricepsplasty through the standard posterolateral incision and an additional medial parapatellar incision. A mesofol sheath was used at the interval between the old regenerate site and the vastus intermedius after removal of the adhesion to decrease its recurrence and facilitate early rehabilitation. Preoperative, Intraoperative, and post operative flexion at six and twelve months marks were recorded. Use of CPM for 3 weeks after the operation was done in all cases. End results at one year post-operatively were evaluated by the HSS knee scoring system. Good to Excellent results were achieved in all cases. **Conclusions:** Judet quadricepsplasty remains a valuable option in treating knee extension contracture. Application of a lubricating mesofol decreases incidence of recurrence of adhesion, facilitate early rehabilitation and maintenance of flexion angle achieved intraoperatively.

Abstract no.: 28267

MRI-BASED SIMPLIFIED SCORING SYSTEM FOR MEDIAL TYPE OSTEOARTHRITIS OF THE KNEE (SMOAK): A NEW CLINICALLY PRACTICAL SCALE DEVELOPED BY ANALYZING A SUBSET OF PATIENTS FROM THE OSTEOARTHRITIS INITIATIVE (OAI)

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Background: Accurate evaluation of severity or stage of disease is essential for estimating the prognosis and efficacy of treatments. For this purpose, several MRI-based semi-quantitative scoring systems for knee osteoarthritis (KOA) have been developed. Among them, Whole-Organ Magnetic Resonance Imaging Score (WORMS) is a representative procedure and has been reported to be useful for KOA evaluation, but it is too complicated and time-consuming for practical use. **Purpose:** To develop a MRI-based simplified scoring system for medial type OA of the knee (SMOAK) Method MR images of 58 knees in 57 patients (including 30 knees from OAI dataset and 28 knees from our institution) with medial type KOA were analyzed using the new scoring method (SMOAK) which incorporated only 3 features of KOA: bone marrow lesions (BMLs), subchondral bone irregularity, and the medial meniscus. Each feature was scored from 0 to 6 according to extent and severity. The total score was 18 at the worst. All knees were also evaluated by the Kellgren-Lawrence (KL) grades, and WORMS. Association among KL, SMOAK and WORMS was assessed. **Results:** The mean SMOAK was 3.0 ± 1.7 , 7.3 ± 2.7 , 10.5 ± 3.4 , and 15.2 ± 2.3 for KL I, II, III, and IV, respectively. The SMOAK had good correlation with WORMS ($r=0.72$, $p<0.001$), and had greater correlation with the medial compartment scores of WORMS ($r=0.88$, $p<0.001$). **Conclusion:** The SMOAK provides KOA evaluation as reliable as WORMS, with less complexity.

Abstract no.: 28268

GUIDED GROWTH BY EIGHT-PLATE FOR CORRECTION OF ANGULAR DEFORMITIES AROUND THE KNEE

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Aim of the study: Evaluation of the guided growth principle in correction of angular deformities around the knee in skeletally immature patients. **Material and methodology:** Our series included application of 43 eight-plates in 22 patients, 14 patients were males and 8 were females, the average age at surgery was 6.1 years, and average follow up was 3.4 years. 14 cases had genu varum and 8 genu valgum. 13 cases were bilateral of which 4 cases the deformity was both femoral and tibial. Evaluation of the source of the deformity either proximal tibial or distal femoral or combined were done in all cases. MRI was done in cases that were suspected to have Bar or permanent fusion of the physis. 8 plate of Orthofix was applied to the opposite side of the affected physeal plate, exactly with two parallel cannulated screws, one in the metaphysis and one in the epiphysis to stop or decrease the growth rate on that side temporary, aiming for gradual correction of the deformity. Clinical and X-ray evaluation were done every 6 months. **Results:** Full correction was achieved in 31 physes out of 43 plates applied to them. Partial correction was achieved in 8 physeal deformities. And 4 achieved no correction. Partial rebound was less than 10 %. **Discussion:** We used to do osteotomy and gradual or acute correction and use either cast, external or internal fixation to treat these cases before evolution of the 8 plate guided growth principle. **Conclusion:** 8 plate is a valuable tool to correct physeal problems around the knee without the need to do massive operation with osteotomies or ex.fix application and guided growth principle is proved to be safe and effective in treatment of angular deformities around the knee with advantages over other commonly used techniques.

Abstract no.: 28273

SHORT TO MEDIUM RESULTS USING THE RE-MOTION TOTAL WRIST REPLACEMENT FOR RHEUMATOID ARTHRITIS

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Introduction: We present the clinical outcome of fourteen patients (sixteen replacements) who underwent Re-motion Total Wrist Replacement (TWR) for the treatment of Rheumatoid arthritis of the wrist. This audit is in compliance with NICE IPG 271, which obligates orthopaedic surgeons who offer TWR to review patient outcome. **Methods:** Patients who had previously undergone TWR were invited for clinical and radiographic assessment to a specifically created clinic. The NICE audit tool designed to support clinicians in data collection was modified for local use. **Results:** Sixteen patients were available for follow-up, up to 5 years after index surgery. Mean pain and satisfaction scores (1-10) were 3.67 and 6.67 respectively. Flexion ranged from 10-60 degrees and extension 0 to 30 degrees. Two patients who were TNF- α medication required surgical intervention for wound breakdown, including one patient who required a radial forearm flap for skin coverage. This patient had a poorer outcome on average compared to the other patients. No patients required revision surgery or conversion to fusion. One patient (2 wrists) had radiographic lysis around the central carpal peg. This patient was asymptomatic and there was no evidence of progression. **Conclusions:** In this small case series with short to medium results all except one patient reported good pain relief, useful range of movement and an improvement in terms of function. The question of efficacy of TWR compared to fusion in the long-term remains unanswered. Other centres using the same implant are encouraged to pool similar data to provide more meaningful outcome data.

Abstract no.: 28275

GP ACCESS TO KNEE MRI: USEFUL OR AN ABUSED RESOURCE?

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Background: In our institution Primary care access to MRI of the knee is limited for suspected meniscal and ligament injuries, given this indication is proven to give General Practitioners (GPs) improved diagnostic confidence, provide patient earlier improvement in knee function whilst being cost-effective. **Aim:** To audit if 1) GPs use MR investigation of the knee appropriately and 2) If proving GPs access to this investigation can assist the orthopaedic surgeon in surgical decision-making in the outpatient clinic? **Patients and Methods:** 68 patients who underwent knee MRI scan as ordered by their GP underwent retrospective radiology report and case note analysis. **Results:** 91.5% of GP ordered MRI knee scans were ordered appropriately. 20 patients were subsequently seen by the orthopaedic surgeon in our outpatient department having been referred by the GP after MRI scan. Of these 20, 16 underwent arthroscopy for suspected meniscal or ligamental pathology. **Discussion:** In our hospital catchment area GPs use access to knee MRI for suspected ligament or meniscal injuries appropriately, moreover provision of this valuable resource has enabled the orthopaedic surgeon to make a definitive treatment for 80% of patients subsequently referred to secondary care.

Abstract no.: 28276

HIP RESURFACING: HOW DOES THE MEDICAL AND HEALTHCARE RELATED DEVICE AGENCY ALERT CHANGE IN THE INITIAL OUTPATIENT CONSULTATION?

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Background: In 2010 the Medical and Healthcare Related Devices Agency (MHRA) published a medical alert for the use of metal-on-metal bearings in hip replacement with specific relation to resurfacing and the incidence of soft-tissue reactions or "pseudotumors". Particular concerns were raised for the use of implants in females, younger patients with smaller head sizes, and higher inclination of the acetabular component. **Alm Given the MHRA alert we felt of value to retrospectively audit the post-op acetabular inclination achieved in our patients, review the range of implant sizes used and the sex/age of patients to determine what impact if any, the MHRA alert should have on consent in the outpatient department?** **Patients and Methods:** Patients undergoing hip resurfacing between Jan 2008 and March 2010 were identified from the theatre register; the implant size used was recorded. Acetabular inclination was measured from the post-op radiographs. N=24 M=16 F=8 Age Mean: 52 years Range: 33-69 **Results:** In women all head sizes were 44mm or less. The average inclination of the acetabular component was 45.9 degrees. 2 patients were less than 40 years of age. **Discussion:** In the study acetabular inclination was acceptable. However in women all implant head sizes were 44mm or smaller, a concern due to the association with soft tissue reaction. In practice this has changed our approach to our female patients in the initial outpatient consultation, although we still offer hip resurfacing, females patients in particular are counselled extensively during the consent process regarding the details of the MHRA alert and the association of hip resurfacing with soft-tissue reaction / pseudo-tumor formation.

Abstract no.: 28278

THE USE OF SHOULDER ULTRASOUND AMONGST THE SHOULDER SURGEONS OF THE UNITED KINGDOM

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Background: There has been an increase in the number of publications advocating routine use of shoulder ultrasound at the outpatient clinic as part of the patient work-up. Aim To determine the current use / uptake of shoulder ultrasound by surgeons in the outpatient clinic. **Methods:** Postal questionnaire study of shoulder surgeons practicing within the UK. Data was collected on use of shoulder ultrasound in clinic or not, indications for ultrasound and other investigations and funding / experience / training undertaken for those using ultrasound. Surgeons were asked if they intended to start using or had previously used ultrasound. **Results:** Response rate of 25% to the questionnaire. 24% of respondents used ultrasound routinely in the cline, 67% did not, whilst 9% had radiologists in clinic to perform ultrasound where necessary. One-third of surgeons not using ultrasound have the intention to do so. **Discussion:** The use of ultrasound in the outpatient clinic is not as widespread as expected. An issue blocking the uptake of shoulder ultrasound by surgeons could be training requirement as directed by the Royal College of Radiologists. Those wishing to establish an ultrasound service should consider the option of having a radiologist work alongside in the outpatient clinic.

Abstract no.: 28279

**SHIRT-BUTTON OVER THE NAIL TECHNIQUE FOR THE TREATMENT OF
ZONE 1 FLEXOR TENDON INJURIES**

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Introduction: The standard method for treatment of Zone 1 flexor tendon injuries in our unit is the shirt-button over the nail technique. In light of recently published studies demonstrating significant morbidity associated with the technique, we felt it of value to audit our results with this technique. **Methods:** 36 patients were treated with shirt-button technique for Zone 1 flexor tendon injuries between 1997 and 2007. Functional outcome data collected by departmental hand therapists as part of an ongoing prospective flexor tendon repair outcomes audit. Retrospective case note review was performed to determine incidence of post-operative surgical complications and subsequent re-operations. **Results:** 31 patients (86%) patients completed 12 weeks follow-up post surgery. Of these patients 30 patients achieved excellent results in terms of Total Active Movement as described in Strickland's modified criteria. However when assessing range of motion at the Distal Interphalangeal Joint (DIPJ) as described by Moiemen and Elliot only 1 patient could be classified as having an excellent outcome at 12 weeks. Only one patient had a post-operative complication directly related to the shirt button technique, a superficial infection that responded with oral antibiotics. **Conclusions:** In this study of 36 patients, over a ten-year period the complications directly related to the use of the shirt button technique for Zone 1 flexor tendon injury are infrequent. Additionally, our results point towards range of motion at the DIP as a more realistic measure of outcome post repair than Total Active Movement as described by Strickland.

Abstract no.: 28280

REPAIR OF ZONE 1 FLEXOR TENDON INJURIES

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Introduction: We present the results for tendon repair of Zone 1 flexor tendon divisions amenable to primary repair distal to and proximal / just under the A4 pulley between, 1997 and 2007. **Methods:** 82 patients were treated by suture repair for Zone 1 flexor tendon injuries over a 10-year period. Outcome data collected by departmental hand therapists as part of an ongoing prospective flexor tendon repair outcomes audit. Retrospective case note review was performed to determine incidence of post-operative surgical complications and subsequent re-operations. **Results:** 69 patients (85%) patients completed 12 weeks follow-up post surgery. Of these patients 65 patients achieved excellent results in terms of Total Active Movement (TAM) as described in Strickland's modified criteria. However when assessing range of motion at the Distal Interphalangeal Joint (DIPJ) as described by Moiemen and Elliot only 4 patients could be classified as having an excellent outcome at 12 weeks. 19% of patients developed a complication, most significantly repair rupture in 3 patients and stiffness / contracture in 9 patients, five of which went onto have further surgery. **Conclusions:** In this study of 82 patients who underwent repair for Zone 1 flexor tendon primary repair, the rate of complications is 19%. Additionally our results support the current literature in stating that range of motion at the DIPJ is more indicative of the result of surgery given that when using TAM as an outcome measure almost all patients are rated as excellent at 12 and 26 weeks.

Abstract no.: 28281

OSTEOSYNTHESES FOR RADIAL HEAD AND NECK FRACTURES

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Fixation of radial head and neck and associated fractures has been controversial. The appreciation of the role of radial head in the stability of elbow and forearm has been the motivation for fixation of these fractures. It was a prospective study conducted to assess the functional outcome of osteosynthesis of radial head/neck fractures in 14 patients in the age group 20-50 years. Two patients had Mason type II, 8 had Mason type III and 2 had Mason type IV. The average follow-up was 26 months (13-38). Patients > 50 years, comminuted radial head /neck fractures > 4 weeks old were excluded. Fracture was exposed using the Kaplan approach. Fracture fragments were temporarily stabilized using K wires. Radial head fragments were stabilized using 1.2 mm mini-fragment screws and the construct was then stabilized to the radial shaft using 2 mm mini-plates and mini screws. The mini plates were applied in the Hotchkiss safe zone so that rotatory movements at elbow are free. Functional scoring was done using the Broberg and Morrey score (90 points.). Pain, motion, radiographic findings and loss of strength were assessed. Early mobilization was done at 2 weeks. Complications seen were implant failure secondary to nonunion 1 and posterior interosseous neuropraxia in 1 case. Open reduction and internal fixation is best reserved for minimally comminuted fractures in young patients with three or fewer articular fragments.

Abstract no.: 28283

TREATMENT OF PROXIMAL FEMORAL FRACTURES ASSOCIATED WITH ADVANCED OSTEOARTHRITIS OF THE HIP

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(Introduction) Proximal femoral fracture associated with advanced osteoarthritis of the hip is rare. But in the aging society, we often experience proximal femoral fractures associated with advanced osteoarthritis of the hip. We report treatment of proximal femoral fractures associated with advanced osteoarthritis of the hip (Materials and Methods) We identified 9 patients (1 man and 8 women; average age was 77 years old, age range, 59-90 years old). We performed open reduction and internal fixation (ORIF) in 8 cases (intra-medullary type: 7 cases, compression hip screw: 1 case) and a primary total hip arthroplasty (THA) in 1 case. We evaluated combined complications, peri-operative complications, fracture healing, conversion to THA, and ambulatory status. (Results) Combined complications included senile dementia in 2 cases, chronic renal failure in 2 cases, Ehlers-Danlos syndrome in 1 case, and Down syndrome in 1 case. There were no serious peri-operative complications such as pulmonary embolism and infection. Fracture sites were united in all patients. One case was converted to THA after fracture healing. Eight patients could walk with support and 1 patient was wheel chair bound because of senile dementia. (Discussion and Conclusion) Bony union occurred in all cases and the level of ambulatory status prior to injury was maintained at final evaluation. In conclusion, as a primary treatment we recommend ORIF as a less invasive surgery for proximal femoral fractures in case of aged patients or who have some combined complications.

Abstract no.: 28287

THE EFFECTS OF BMP-6, BMP-9 AND HISTONE DEACETYLASE INHIBITORS (HDIs) ON THE OSTEOGENIC BEHAVIOR OF hMSCS IN MONOLAYER CULTURE

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Introduction: The utilization of hMSCs to generate osteoblasts presents an attractive opportunity for addressing orthopaedic problems that require substantial bone formation. Rh BMP-2 and BMP-7 are in clinical use for bone healing, but hMSCs of human origin are only moderately responsive to these proteins. We investigated the effects of BMP-6, BMP-9 and HDIs on the osteogenic behavior of hMSCs in monolayer culture. **Methods:** Human bone marrow was obtained from patients undergoing hip arthroplasty, and the mononuclear cell fraction was cultured in order to isolate and expand the hMSCs. After 24h, rhBMP-2 (100 ng/ml), rhBMP-6 (100 ng/ml) or rhBMP-9 (100 ng/ml) were added to the cultures. Additional MSCs were cultured to test the effects of pre-treatment with two HDIs: valproic acid (VPA) and trichostatin A (TSA). After 4 days osteoblastic differentiation was induced by supplementing the medium with dexamethasone (10-7M); untreated hMSCs were used as controls. Alkaline phosphatase (ALP) activity was analyzed at day 10 as a marker of early osteoblastic differentiation, and alizarin red staining and calcium assay were performed at day 21. **Results:** Treatment of monolayer cultures of hMSCs with rhBMP-6 and -9 resulted in moderately better ALP acitivity and mineral deposition than treatment with rhBMP-2. Furthermore, pre-treatment with VPA or TSA prior to the initiation of differentiation also increased mineral deposition in a dose-dependent manner. BMP-6 and -9 are far less potent than dexamethasone in this regard. **Conclusion:** Pre-treatment of hMSCs with clinically available HDIs (VPA and TSA) also enhanced osteogenic differentiation, which implies that HDIs provide an additional strategy for enhancing bone engineering.

Abstract no.: 28289

**COMPARISON OF AUTOGRAPH, ALLOGRAFT AND COMBINED GRAFT
IMPLANTATION IN SALTER OSTEOTOMY**

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Objective: Bone graft implantation and fixation is one of the major step of the Salter innominate osteotomy for the treatment of hip dislocation, however, it remains unclear which of the auto-, allo-, or combined bone grafts for the fixation and stability of the osteotomic procedures is preferable in terms of subsequent hip development. The purpose of the present study was to compare acetabular development in patients managed for dislocation of the hip with these three graft implantation choice **Methodes:** This retrospective study compared the results of autograft, allograft, and combined grafts implantation in 29 children (36 hips) who underwent Salter osteotomy. Autograft fixation was used in 21 hips, allograft fixation was used in 6 hips, and the combined graft fixation was used in 9 hips. **Results:** In the autograft group, 76% of patients had a successful result; 4 of 8 of patients with a neuromuscular disorder in this group had a successful result. In the allograft group, 93% of patients had a successful result; 2 of 3 patients with a neuromuscular disorder in this group had a successful result. In the combined graft group, 96% of the patients had a successful result, 2 of 2 patients with a neuromuscular disorder in this group had a successful result. With the patients older than 4.5 year, the auto, allo-, and combined graft implantation provided successful results 67%, 89% and 92% respectively. **Conclusion:** Salter osteotomy performed with allograft fixation, or combined graft provided similar or better results than autograft due to quantity of the bone graft, especially in children older than 4.5 year age or with neuromuscular disorders.

Abstract no.: 28291

DEGA OSTEOTOMY FOR THE TREATMENT OF DEVELOPMENTAL DISLOCATION OF THE HIP

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To investigate the short-term results of the one-stage operative Dega osteotomy for the treatment of developmental dislocation/dysplasia of the hip in Chinese children. Methods: Eleven children (fifteen hips) with an average age of five years and four months and varying degrees of developmental hip dysplasia, subluxation, or dislocation were treated with a Dega osteotomy. Nine hips (60%) had a concomitant femoral osteotomy and fourteen (93%) had an anterior open reduction of the hip in addition to the Dega osteotomy. To be included in the study group, each patient had to have complete clinical documentation of the range of motion, presence or absence of a limp, limb-length discrepancy, hip pain, and limitation of activity. Radiographs were reviewed to determine the acetabular index, the center-edge angle, whether the Shenton line was intact or broken, and any change in the projection of the obturator foramen. Results: At an average of fifty-five months postoperatively, all patients demonstrated unlimited physical activity and no limp. The average acetabular index changed from 52.5 preoperatively to 22.5 at the time of follow-up. The center-edge angle ranged from less than -56 to 7 (average, -26.5) preoperatively and from 18 to 27 (average, 21) at the time of follow-up. A change in the obturator foramen was observed in eight hips (58%). The Shenton line was broken in eleven hips preoperatively but in one postoperatively. One Dega osteotomy was revised immediately after the index operation, and three hips underwent late repeat correction of the proximal part of the femur; one of the repeat corrections was performed together with a repeat Dega osteotomy. Conclusions: Our initial experience with the Dega osteotomy demonstrated it to be a valuable surgical treatment of developmental dysplasia of the hip in a child of walking age.

Abstract no.: 28292

UNILATERAL BICONDYLAR HOFFA'S FRACTURE WITH EXTENSOR MECHANISM INJURY AND ITH IRREDUCIBLE KNEE DISLOCATION KNEE DUE TO PATELLAR FRACTURE FRAGMENT – A CASE REPORT

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A 15-year-old child presented to us 2 weeks after injury, with knee fracture dislocation which was irreducible with button holing of the femoral condyles through defect in the extensor apparatus. An attempt at closed reduction failed. Radiology revealed bicondylar Hoffas fracture dislocation knee with patella fracture and buttonholing of the condyles through the patella fracture. The patellar fracture fragment leads to the irreducibility of the dislocation with buttonholing of the condyles. The child also had ipsilateral tibia fracture with contralateral sacroiliac joint disruption. We present our surgical and rehabilitative experience of this rare combination of injuries. Open reduction and internal fixation with cancellous screws was performed with anterior approach, for the condyles and patella, with a trans-articular fixator to immobilise the knee and tibia. Skeletal traction was used for the sacro iliac joint. Intensive physiotherapy protocol was followed after fixator and traction removal at 2 months. Full weight bearing was allowed at 3 months post injury. Full range of motion of the knee and hip were observed 1 year after injury with no subjective pain or instability.

Abstract no.: 28293

THE CLINICAL EFFICACY OF A SINGLE VIAL KIT PREPARATION OF 99MTC-CEFTRIAXONE FOR THE DIAGNOSIS OF ORTHOPAEDIC INFECTIONS

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Objectives: Considering the resistance of microorganisms to antibiotics, an attempt to develop a new tool for infection imaging was done using ceftriaxone. In this study, efficacy of 99mTc labeled ceftriaxone for the detection of orthopedic infections.

Methods: Ceftriaxone labeled with Tc-99m with radiolabeling efficiency (99%) and formulated into a ready to use single vial kit preparation. The study involved 35 patients (28Female; 7Male patients, mean age 36.57 yrs, range 14-74 yrs) with clinical and radiological suspicion of orthopaedic infection. All the patients underwent a 3-phase bone scan (740 MBq, 99mTc-MDP, i.v. injection) followed by (4 days later) 99mTc- ceftriaxone scanning (static/ isotime images at 1h, 4h, 24h after i.v. administration of 555.0MBq activity of the radiotracer). Whole body scanning was also done to study the bio-distribution of the radiotracer. The sample aspirates from site involved were taken and analyzed for the microbial growth.

Results: In the present study, 27/35 patients had positive scan finding and an equal number (27/35) patients had shown positive culture findings. One of the 27 patients, with positive bone scan was false positive. The only false positive result was seen in a patient with bilateral Total Knee Replacement and the false positive result could be attributed to foreign body reaction or postoperative changes around the implant. The time duration between the date of surgery and the date of scan was found to have no significant effect on the scan result as determined by Mann-Whitney test. The diagnostic accuracy of the technique was found to be sensitivity and specificity were 96.30%, and 87.5% respectively.

Conclusions: Single vial kit preparation of 99mTc-ceftriaxone has reasonably good accuracy in the diagnosis of orthopaedic infections.

Abstract no.: 28303

STABILITY OF EXTERNAL FIXATORS WITH PARALLEL AND CONVERGENT PINS

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Our aim was to compare stabilities of external fixator with parallel pins (all pins in one plane) and external fixator with convergently oriented pins (pins in two plain). As material we used external fixator with 4 pins inserted in one plane, and external fixator with 4 pins inserted in different planes. These fixators were applied on each tube like long bone model, cut on the middle with gap of 8mm. On bone model fragments were applied 100 N of loads, in 2 directions perpendicular on long axis of bone models. At the same time there were measured fragments movements produced by the used loads. They have been obtained following results: in fixator with parallel pins, all in one plane, stability is 4 times bigger in the plane of the pins than in perpendicular plane, while stability in 90 degrees convergent orientation stability is nearly same. External fixation device with 90 degrees convergent pins gives balanced 3D stability similar to natural long bone biomechanical conditions. Such 3D external fixator has been developed by Mitkovic. This high mobile external fixation device is routine use in several countries and has been applied so far in more than 16 thousand patients.

Abstract no.: 28306

THE USE OF LOW-INTENSITY, PULSED ULTRASOUND IN THE TREATMENT OF CHALLENGING NONUNIONS

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INTRODUCTION: Nonunion remains a considerable challenge to orthopaedic surgeons. Use of low-intensity, pulsed ultrasound (LIPUS) remains a controversial treatment option. In this retrospective study, outcomes following LIPUS treatment for nonunions were investigated. **MATERIAL AND METHODS:** The first 32 patients managed with LIPUS at our institution were identified from fracture clinic records. Data collected included demographic characteristics, bone treated, initial treatment (conservative versus operative), duration of LIPUS treatment, eventual outcome or need for further treatment/surgery to achieve union. **RESULTS:** Of the 32 patients treated with LIPUS, from May 2006 to January 2009, 3 had incomplete records and were excluded. Of the 29 patients (M = 16; F = 13; mean age 49.3), 27 (93%) had been diagnosed with nonunion post trauma with 2 occurring post elective surgery. Long-bone fractures accounted for 24/27 (88.9%) cases (remaining fractures included 2 metacarpal and 1 clavicle). 15 (55.6%) of the trauma patients were treated operatively within 48 hours of injury; the remaining 12 were treated conservatively at initial presentation. LIPUS treatment was initiated after a mean 112.9 days with mean treatment duration of 63 days. In 5 patients (17.2%), LIPUS was discontinued after a mean 123.6 days, with surgery being required to correct the nonunion. The other 24 patients (82.8%) were documented to have successfully completed LIPUS treatment with union achieved at a mean 98.6 days post LIPUS initiation. **DISCUSSION:** Low-intensity, pulsed ultrasound can be a successful, noninvasive treatment for nonunions. LIPUS carries minimal risk and may be considered in all patients with challenging nonunions.

Abstract no.: 28308

WET OR DRY BANDAGES FOR PLASTER BACK-SLABS?

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Background: Cotton crepes and stretch bandages are commonly used in back-slabs in orthopaedics. In theory they allow swelling to occur after injury while splinting the fracture. Many authors feel that when applying back-slabs that wet bandages expand and later contract back to the original length when drying. This in turn leads to a tighter splint and significant discomfort to the patient. In the worst case scenario the increase in pressure can lead to compartment syndrome and eventual limb loss. Opponents to this feel that the application of a wet bandage prevents the Plaster-of-Paris (POP) setting to quickly and giving time to apply a mould or attain correct position of the limb. **Aim and Methods:** We aimed to determine if there was any significant changes in length of commonly used bandages when wet as well as any further change when left to dry again. We evaluated the changes in length of two types of bandage when dipped in three different temperatures of water. **Results and Conclusion:** Both crepe and cling bandages contracted in the wet state compared to the original wet state (median 16% of original size). Both bandages further shrank upon drying to a median on 7% of the original size. The temperature of water used to dip the bandages made no difference upon the amount of shrinkage. Our results clearly show that contrary to popular belief cotton bandages shrink initially when wet. However they go on to shrink further when drying. When a bandage that is applied circumferentially to a cylindrical cast reduces in length by 7%, this could theoretically increase the pressure in a cast by 50%. We therefore recommend that bandages should only be but on in dry form when applied to a plaster back-slab.

Abstract no.: 28310

POSTERO-MEDIAL RELEASE IN PATIENTS WITH CLUBFOOT TREATED WITH THE PONSETI METHOD

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The purpose of this study was to identify factor associated with recurrence of clubfoot deformities inpatients treated with the Ponseti method that leaded to a postero-medial-release (PMR). This is a case-control study in which 35 cases that required a PMR were compared to 37 matched controls. The variables evaluated: Genre, Dimeglio type, age at the initial Ponseti intervention, number of casts, age at the performance of the Achilles tenotomy (AT), duration of the cast posterior to the AT, necessity for a revision of AT, use of the Denis-Browne brace and single-parent care. Tests for normality were performed for dimensional scales, descriptive statistics are presented. Non-parametric two-tailed tests for independent samples were performed. Strength of associations were reported with odds ratios, hypothesis testing was performed with a chi-squared test, a p value of 0.05 was considered significant. We found that age at the first Ponseti intervention, age at the performance of the AT and the duration of the cast posterior to the AT were similar in both groups. Genre and single-parent care were variables not associated to recurrences that lead to a PMR. Dimeglio type in patients that recurred was 3 while in controls was 2 ($p<0.001$), patients that required a PMR had a median of 7 casts (IQR=5) while controls had a median of 5 casts (IQR=4) ($p=0.02$). The necessity for a revision of the AT was associated with recurrence, $OR=8.73$ ($p<0.01$, CI95%: 2.8-27.18) as well as non compliance with the Denis-Browne brace, $OR=24.73$ ($p<0.01$, CI95%: 7.55-81.05). Patients with severe deformities that require more casts, a revision of the AT and do not comply with the Dennis-Browne brace have the possibility of recurrence and a PMR.

Abstract no.: 28312

COMPARTMENT SYNDROME OF THE EXTREMITY WITHOUT BONE INJURIES

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Patients of acute compartment syndrome are needed emergent diagnosis and therapy. We investigated the clinical characteristic of the compartment syndrome without bone injuries and examined factors related to remaining functional loss. In a retrospective study, from April 2006 to March 2009, 18 patients of the compartment syndrome without bone injuries were referred. The factors; sex, age, cause of the onset, affected site, six signs of clinical symptoms at the first visit, diagnostic method, therapeutic method, serum creatinine kinase (CK) level and compartment pressure were evaluated about remaining functional loss at the final follow up. The cause of the onset was contusions (8 cases), prolonged limb compression (5 cases), hematoma (3 cases) and acute lower extremity arterial occlusions (2 cases). Affected sites were lower leg (9 cases), thigh (5 cases), forearm (2 cases), hand (1 case) and hip (1 case). Prolonged limb compression has significant difference concerning remaining functional loss ($p<0.01$). Age, affected site, compartment pressure, and the time from the onset to fasciotomy have no significant difference concerning remaining functional loss. CK level at the first visit and max CK level have significant difference concerning remaining functional loss ($p<0.05$). Five of six signs; pressure, pain, pain with passive stretch, paresthesia, paresis, pale was a risk factor of remaining functional loss ($p<0.05$).

Abstract no.: 28313

IMMUNOLOGICAL ASPECTS OF ASEPTIC INSTABILITY AFTER HIP REPLACEMENT

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We have examined 17 patients with aseptic instability of endoprothesis. Our investigation has shown that three months after the surgical treatment the CD3+ lymphocyte fraction reduced by 27,7% ($p < 0,05$) in patients with aseptic instability of the prosthesis as to the data, stated before the operation. In addition, the T-helper (CD4+) rate was also lower by 37,2% ($p < 0,01$). At the same time in patients with a complicated postoperative period we have registered the reduction both in cells with cytotoxic activity (CD8+) by 45,4% ($p < 0,001$), and in natural killers by 29,8% ($p < 0,05$). As regards HLA- DR, against the background of aseptic instability there was a tendency to their reduction in comparison to the data registered before the beginning of the treatment. As to the humoral link, the IgG level against the background of aseptic instability has increased by 52% ($p < 0,001$) from $11,9 \pm 1,7$ mg/ml to $24,8 \pm 2,1$ mg/ml, and the content of IgM has increased by 69,1% ($p < 0,001$) from $1,3 \pm 0,12$ mg/ml to $4,21 \pm 0,73$ mg/ml. At the same time the IgA level during the whole period was within the limits of reference quantity and constituted $2,59 \pm 0,34$ mg/ml и $2,07 \pm 0,29$ mg/ml accordingly. The IgE level was high and was observed in 92% of the patients both at the admission to hospital and after the surgery: (168,4+19,1 и 95,7+11,4 mg/ml accordingly.

Abstract no.: 28316

DIAGNOSTIC STRATEGY FOR SKELETAL METASTASES AS THE INITIAL MANIFESTATION OF MALIGNANCY

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Introduction: The aim of this study was to assess the profile and diagnostic strategy of metastatic bone disease from occult malignancy. **Material and Methods:** Among 2028 patients with skeletal metastases treated between September 2002 and November 2009 in our institution, 227 patients showed up with skeletal lesions as the first manifestation malignancy. We carried out a prospective study of the effectiveness of a diagnostic strategy in these 227 cases, and also analyzed the final diagnosis. The diagnostic strategy consisted of two stages. The first stage covered medical history, physical examination, chest and bone X-ray, laboratory analysis including tumor markers, serum immunoelectrophoresis, bone scan and computed tomography (CT) of the chest, abdomen, and pelvis. After this evaluation, the second stage was done, if necessary, including bone biopsy, biopsy of the locus which doubted primary, thyroid ultrasonography, mammography, gastroscopy, colonoscopy and positron emission tomography (PET). **Result:** Sixty-five of the primary tumors were lung carcinomas, 31 were myelomas, 19 were malignant lymphomas and 19 were prostate carcinomas. Carcinoma of the kidney, liver, breast, stomach or thyroid was followed. The primary cancer was not determined in 21 patients. One hundred and sixteen patients (51%) could be diagnosed with the first stage. CT scans were useful, and proves advantageous for the diagnosis of carcinomas except hematological malignancy and gastrointestinal carcinoma. Tumor markers were useful, especially for the diagnosis of prostate carcinoma. In addition, skeletal biopsy was particularly useful for the diagnosis of hematological malignancy. PET scan was not useful for a primary search.

Abstract no.: 28317

**ARTHROSCOPY IS USEFUL IN SELECTING THE SURGICAL METHOD
FOR PEDIATRIC LATERAL HUMERAL CONDYLE FRACTURES**

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In the treatment of pediatric lateral humeral condyle fracture (LHCF), the existence of cartilage continuity and displacement is important, however the confirmation is difficult even with arthrography, MRI, ultrasonography and MDCT. We report the usefulness of arthroscopy, with which articular surface can be observed directly and less invasively, in treating LHCF. Eight children with LHCF, an average of 5.5 years old, were operated using arthroscopy. Percutaneous pinning or cannulated screw fixation is performed when cartilage continuity is observed arthroscopically. In case of displaced fracture, following arthroscopy, open reduction and internal fixation (ORIF) is selected using posterolateral approach. Operation is performed at lateral position with affected extremity hanged, so that all methods (arthroscopy, percutaneous pinning and ORIF) can be performed. Articular surface of the fracture site could be observed arthroscopically in all cases. Four had cartilage continuity, and percutaneous pinning or cannulated screw fixation was performed. In four cases of displaced fractures, ORIF was performed. We consider that the arthroscopy is useful in determining the surgical plan in pediatric LHCF whether closed or open method should be selected.

Abstract no.: 28324

**SURGICAL TREATMENT OF THE RUPTURED ACHILLES TENDON:
A COMPARATIVE STUDY BETWEEN PERCUTANEOUS AND OPEN
REPAIR**

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The purpose of this study was to compare and analyze the clinical outcomes of the percutaneous and open repair of acute ruptured Achilles tendon. We performed a retrospective study on 45 patients from January 2006 to June 2009. 24 patients who were managed with percutaneous repair for acute ruptured Achilles tendon were selected as group 1, and 21 patients who were managed with open repair were selected as a group 2. In group 1, 17 cases were excellent, and 7 cases were good by Arner-Lindholm evaluation scale. In group 2, 12 cases were excellent, 9 cases were good. AOFAS score was an average of 94.1(81-100) for group 1, and 94.7(91-100) for group 2, there was no difference between both groups. As to postoperative overall satisfaction, in group 1, 5 cases were very satisfied, 16 cases were satisfied, 3 cases were ordinary. In group 2, 12 cases were very satisfied, 9 cases were satisfied. For postoperative cosmetic satisfaction, in group 1, 13 cases were satisfied, 11 cases were ordinary, and, in group 2, 9 cases were very satisfied, 12 cases satisfied. In group 2, a case of deep wound infection and three cases of skin necrosis were observed. 2 cases of sural nerve injury were seen in group 1 and recovered within 3 months. As a result, percutaneous repair of acute ruptured Achilles tendon have high level of cosmetic satisfaction compared with open repair. But there is no difference in clinical outcomes.

Abstract no.: 28325

**FACTORS INFLUENCING THE ACCURACY OF PRE-OPERATIVE
TEMPLATING IN TOTAL HIP ARTHROPLASTY**

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Pre-operative templating in total hip arthroplasty (THA) has been shown to reduce intra-operative complications. It can also highlight potential problems such as offset mismatch and availability of non-standard sizes of implant. Recently, digital templating has replaced hard copy, acetate templating. Several studies have shown that knowing the magnification factor for an individual pelvis radiograph is essential for this accurate templating. Several methods are described for determining the magnification, and in our unit a 30mm steel scaling ball is placed between the patient's legs, at the height of the greater trochanter from the x-ray plate. The aim of this study was to audit the accuracy of templating in a single surgeon, single implant practice, and to investigate what factors, if any, influenced this accuracy. Retrospective data was collected on patients who had undergone uncemented total hip arthroplasty over a 12 month period. Pre-operative templating and post-operative radiographs were reviewed and magnification factors were calculated using the scaling ball or the known implant size. The location of the scaling ball was noted and the template and actual implants were recorded. Patient demographics including the patient's body mass index (BMI) were taken from the National Joint registry forms. Fifty three patients had a full data set for analysis. Based on the post-operative radiographs, the mean magnification factor was 127%. The cup size was within 1 size of the actual implant in 87% of cases and the femoral component in 92%. The patient's age, sex and BMI did not have any statistically significant correlation with the accuracy of templating, nor did the position of the scaling ball relative to the pubic symphysis. Based on these results, with the use of a scaling ball as described, there do not appear to be any measurable factors influencing the accuracy of templating in THA.

Abstract no.: 28326

**ARTHROSCOPIC ELBOW SYNOVECTOMY IN RHEUMATOID ARTHRITIS:
COMPARISON WITH INTRA-ARTICULAR STEROID INJECTION**

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Background: Arthroscopic synovectomy and intra-articular steroid injection are the two modalities used in patients of rheumatoid arthritis with elbow involvement to relieve pain and gain function when optimal drug treatment fails. However, till date no study has compared the two methods of treatment. **Method:** Arthroscopic elbow synovectomy was performed on 15 elbows (Group A) and intra-articular steroid injection was given in 15 elbows (Group B) with radiological change < 3 Larsen grade, and followed up for 6 months period. Clinical assessment was done on Visual Analogue Scale (VAS) for pain, Mayo Elbow Performance Score and Arc of flexion. **Results:** Both arthroscopic and intra-articular injection produced similar pain relief. All patients in arthroscopic synovectomy group were pain free at the end of study as compared to only two patients in injection group. There was also a significant improvement in the Mayo Elbow Performance Score (MEPS) in both the groups, but there was better improvement in the MEPS in arthroscopy group. There was a gain of 30.0 degrees of Arc of flexion in arthroscopic group as compared to 9.7 degrees in injection group. **Conclusion:** Pain relief, improvement in elbow function and arc of flexion of elbow joint are better achieved by arthroscopic procedure as compared to intra-articular injection in rheumatoid arthritis.

Abstract no.: 28329

**SURGICAL LOCALIZATION OF RADIAL NERVE: A CLINICAL STUDY IN
CADAVERS AND PATIENTS**

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Background: The relationship of radial nerve has been described with various osseous landmarks, but such relationship may be disturbed in the setting of humerus shaft fractures. We investigated the relationship of radial nerve with the apex of triceps aponeurosis and a new technique of localization of the nerve is described. **Materials and Methods:** We performed dissections of 10 cadavers and gathered surgical details of 60 patients (30 cases and 30 controls) during posterior approach of the humerus. We measured the distance of radial nerve from the apex of triceps aponeurosis along the long axis of humerus in cadaveric dissections and cases. It was correlated with the height and arm length. For all patients, we recorded time until first visualization of radial nerve, blood loss, and postoperative radial nerve function. **Results:** The mean distance of radial nerve from the apex of triceps aponeurosis was 2.5 cm, which correlated with the patients' height and arm length. The mean time until first visualization of radial nerve from the starting of skin incision was 6 minutes, as compared to 16 minutes in the control group. Mean blood loss was 188 ml and 237 ml, respectively. With the numbers available, we observed no difference in the incidence of patients with postoperative nerve palsy: none in study group and three of patients in the control group. **Conclusion:** The apex of triceps aponeurosis appears to be a reliable and easily reproducible landmark for the localization of radial nerve during the posterior approach to humerus.

Abstract no.: 28335

CRUSH INJURIES AND CRUSH SYNDROME – A REVIEW

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Crush injuries can occur as epidemics following natural disasters or acts of war and terrorism. They can also occur sporadically after industrial accidents or following periods of unconsciousness from drug intoxication, anaesthesia, trauma or cerebral events. A common pathophysiological pathway has been elucidated over the last century describing traumatic rhabdomyolysis leading to myoglobinuric acute renal failure and a systemic 'crush syndrome' affecting many organ systems. If left unrecognised or untreated then mortality rates are high. If treatment is commenced early and the systemic effects are minimised then patients are often faced with significant morbidity from the crushed limbs themselves. We have performed a thorough review of the English language literature from 1940-2009 investigating crush injuries and crush syndrome and present a comprehensive summary. Firstly we concentrate on the systemic crush syndrome. We determine the pathophysiology, clinical and prognostic indicators and treatment options such as forced alkaline diuresis, mannitol therapy, dialysis and haemofiltration. We discuss more controversial treatment options such as allopurinol, potassium binders, calcium therapy and other diuretics. We also discuss the specific management issues of the secondary 'renal disaster' that can occur following earthquakes and other mass disasters. We then look in more detail at articles relating to the local effects of crush injuries on a limb. We discuss the pathophysiology of skeletal muscle damage following crush injuries and how to minimise morbidity by salvaging limb function. In particular we discuss the controversies surrounding fasciotomy of crushed limbs and compare surgical management with conservative techniques such as mannitol therapy, hyperbaric oxygen therapy, topical negative pressure therapy and a novel topical treatment called gastric pentadcapeptide BPC 157.

Abstract no.: 28336

CAUDA EQUINA SYNDROME: A RARE ETIOLOGY

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Study design: case report of a patient who presented with sudden onset cauda equina syndrome due to spinal aspergillosis. Objective: to describe an unusual cause of acute onset cauda equina syndrome due to spinal aspergillosis. Summary of background data: spinal aspergillosis is very rare and usually is reported in immunocompromised patients. The drug of choice for invasive aspergillosis has been amphotericin B. Method: case report and review of literature. Result: the cause of sudden onset cauda equina syndrome was diagnosed to be due to aspergillosis. Surgical decompression followed by oral Itraconazole therapy resulted in good recovery. Conclusion: spinal aspergillosis can rarely present as acute onset cauda equina syndrome in immuno-competent patients. Urgent surgical decompression with prolonged antifungal medication gives good results.

Abstract no.: 28337

**A PIONEERING LEGACY – THE DEVAS ELBOW REPLACEMENT 31
YEARS ON**

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Background: We present a case report of a total elbow replacement that survived 31 years in a young female patient with, early onset rheumatoid arthritis. **Case Report:** Professor Michael Devas inserted this self-designed, unlinked elbow prosthesis in 1973. The ulnar component loosened after 17 years and was revised using impaction grafting to restore bone stock. The original prosthesis demonstrated minimal wear and it was therefore reinserted. It functioned for a further 14 years allowing the patient to continue working virtually pain free as a secretary, mother and housewife. **Discussion:** To our knowledge this is the longest surviving unlinked elbow replacement in the literature.

Abstract no.: 28340

**ONE LEG STANCE AND STAIR CLIMBING SITUATION HIP PROSTHESES
SIMULATION**

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Objective of present investigation is the structural analysis of the load carrying structure of the compound proximal femur implant. The present study compares three different endoprosthetics within the same femur under exactly the same loading. The local deflection behavior resulting in a different load transport depends mainly on the different regions of bone material encountered at the circumference of the implant and its position at the resection of the femur. It may be stated, that the endeavor of the compound region, bone and implant, is different, comparing the two loading cases. The one leg stance mainly acts on the medial and anterior region, whilst the stair climbing situation is influencing strongly all regions around the implant. As the shorter implants are not acting in zones 5-7 the characteristics of energy absorption show a higher loading of these regions caused by the stiffness-jump between compound and bone resulting in a stronger bending energy in the undisturbed femur region, the natural bone is loaded mainly in the femur neck region by the one leg stance. The best behavior in this strong femur seems to pertain to the Bicontact stem/Aesculap as istenergy transport to the bone is very well distributed and no high local stresses are observed. The very high local stresses far beyond the elastic limit of bone material for the short stem, disqualifies this kind of stem for at least the one leg stance. The quite flexible Phisiohip/Copf-Bionic stem has an acceptable behavior in both loadings, but undergoes the highest bending stresses of the compared stems, but its behavior in the one leg stance situation is quite similar to the natural bone comportment for the long term analysis.

Abstract no.: 28345

PERCUTANEOUS SYNOVIAL FLUID ASPIRATION AND BIOPSY IN VARIOUS JOINT DISEASES – STUDY OF 110 CASES

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Background: Early diagnosis and early institution of treatment of joint diseases is important to prevent the morbidity and mortality. Although detailed clinical examination supported with conventional investigations diagnosis is often possible, but often it is difficult diagnose atypical presentations with negative laboratory investigations. Many a time joint radiological investigations cannot diagnose pathology in the early stages. Combined synovial fluid aspiration and biopsy plays an indispensable role in accurate diagnosis of joint disease and aptly aids in timely institution of treatment. Open synovial biopsy, through arthrotomy has disadvantages of hospitalization, tourniquet application, infection and general/regional anesthesia. These could be avoided by closed needle biopsy performed under local anesthesia. **Materials & Methods:** Study was conducted in 110 cases of joint diseases. All patients after clinical evaluation with clinical examination, conventional laboratory and radiological investigations were subjected to synovial fluid study (physical and biochemical analysis, bacteriological, serological, cytological and polarized microscopy) and synovial needle biopsy(histopathological examination) by using Parker Pearson Needle. Some of the patients were subjected to arthroscopy for comparison. **Results and conclusion:** The sensitivity and specificity to diagnose various joint diseases are compared with that of standard procedures. We have also found that it is possible to diagnose Rheumatoid arthritis by detecting RA factor in the synovial fluid. The reliability, feasibility, accuracy, safety of the procedure is comparable with that of Arthroscopy and open procedures.

Abstract no.: 28350

FROZEN SHOULDER SYNDROME, ADHESIVE CAPSULITIS OR MYOFASCIAL TRIGGER POINTS

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INTRODUCTION: Frozen shoulder, also known as adhesive capsulitis, is a condition characterized by stiffness and pain in your shoulder joint. Signs and symptoms begin gradually, worsen over time and then resolve, usually within a two-year period. **MATERIAL AND METHODS:** Non experimental study of approaching to reality and of descriptive type, in two years period, of 23 swimmers who presented pain over the posterior aspect of the shoulder with spillover references zones cover the scapula and extend down the posterior aspect of the arm to the elbow and a strap-like area of referred pain and tenderness around the wrist. We used the MTP diagnostic clinical criteria proposed by Travell and Simons, exploratory tests, both shoulders AP/AXIAL X rays and IRM. **RESULTS:** 23 swimmers: 14 men and 9 women. All presented Myofascial Trigger Points essential diagnostic criteria when pressing subscapularis MTP. It was impossible to get 90° arm abduction. Swimmers were unable to reach backward with the arm held at shoulder level at the beginning, with the progression, abduction is restricted to lesser than 45°. The strap-like area is an excellent diagnostically useful accent; characteristic is that the dorsum is more painful and tender. X rays examination and IRM did not show soft tissues nor osseous pathology. **DISCUSSION:** These MTPs cause a terrible shoulder restriction and articular dysfunction that contribute to the pain as Mennell described. It is very difficult to reach MTP due to marked muscle shortening that not tolerates abduction beyond 30°, as well an adequate abduction of the scapula is essential to reach for palpation this muscle. **CONCLUSION:** The available literature indicates that MTP are rarely considered as diagnosis of frozen shoulder, even when the two criteria - pain and restricted range of motion- commonly used to diagnose it identify two key effects of subscapularis MTP.

Abstract no.: 28352

BILATERAL PATHOLOGICAL DISLOCATION OF HIP SECONDARY TO TUBERCULOUS ARTHRITIS FOLLOWING DISSEMINATED TUBERCULOSIS – A CASE REPORT

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Background: Pathological dislocation of hip has been reported as a complication of osteomyelitis of proximal femur, suppurative arthritis, tubercular arthritis or rarely neurofibromatosis. Various pathomechanisms including capsular laxity, synovial hypertrophy, acetabular and proximal femur destruction have been explained. Bilateral pathological dislocation in infective arthritis has been reported only once. **Methods:** We report a case of bilateral pathological dislocation of hip in a 6 year old girl secondary to tubercular arthritis following disseminated tuberculosis, which we managed operatively and followed for 18 months. **Results:** At 18 months follow-up after surgery, the child has a stable reduction of left hip with a good functional outcome and able to carry out her daily activities with minimal difficulty. Radiographs showed mild subluxation in the left hip and signs of instability in the right hip. **Conclusion:** Bilateral pathological dislocation of hip associated with tuberculous arthritis is a rare condition and has never been reported in the literature. All patients with disseminated tuberculosis have to be followed up closely, for the early detection of its many complications.

Abstract no.: 28360

DOUBLE BUNDLE ACL-RECONSTRUCTION – IS IT REALLY AN IMPROVEMENT?

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The double bundle (DB) concept of the anterior cruciate ligament (ACL) increased our anatomical and biomechanical understanding of symptomatic anteromedial (AM) or posterolateral (PL) bundle tears. Recent interest focused on establishing pre- and intraoperative ways of assessing the different types of symptomatic one bundle tears in order to perform an individual ACL augmentation. In a recent published study by OCHI et al. (2006) they found an one bundle tear of the ACL in 10% of all cases; of these 2.5% had an isolated PL bundle tear. Sparing intact parts of the ACL may have several theoretical advantages including better stability of the reconstruction, higher level of proprioception, increased anatomical accuracy of bone tunnel placement and faster vascularisation and rehabilitation. This may possibly improve the clinical outcome for the patient. However, an ACL augmentation requires a precise diagnostic assessment of the injury pattern, arthroscopic anatomical knowledge and a careful augmentation while preserving intact parts of the ACL. The anatomic double bundle concept changed the way of assessing and treating symptomatic one bundle tears of the ACL. The diagnosis of symptomatic one-bundle tears is a combination of patient's history, clinical examination, MRI and arthroscopic evaluation. The ACL augmentation is performed similar to a "traditional" single bundle technique while sparing the intact ACL fibers. This may support mechanical strength of the reconstruction – especially in the early postoperative period, and may maintain mechanoreceptors, neural elements and blood vessels to allow better proprioception, vascularisation and an accelerated rehabilitation with faster return to sports. The knowledge about anatomical double bundle ACL reconstruction and the observation of different ACL tear pattern has completely changed the concept of ACL reconstruction. Double bundle reconstruction in complete ACL tears and augmented ACL reconstruction if it ever possible for single bundle tears.

Abstract no.: 28362

SURGICAL TREATMENT OF ACL AVULSION INJURIES IN THE SKELETALLY IMMATURE PATIENTS BY CERCLAGE WIRE LOOP TECHNIQUE

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Misr University for Science and Technology, 6 October (EGYPT)

Treatment of ACL injuries in the adult patient is one of the most published topics in recent orthopedic literature. Comparatively, less is known about this injury in skeletally immature patients. Most ACL injuries in the skeletally immature population were predominantly avulsion fractures of the tibial spine in the past, these injuries were most commonly reported after a fall from a bike. However, as a result of the growing number of children participating in organized competitive athletics, at younger ages, greater awareness for this injury, and improved diagnostic capabilities tibial eminence fractures are now being seen with increasing frequency. The Objective of this study is to investigate the clinical therapeutic effect of open reduction and fixation of anterior cruciate ligament (ACL) avulsion fracture from the tibia spine by miniarthroscopy cerclage loop wire technique and tied over the bone bridge on the tibia. Methods: From June 2008 to December 2010, 18 cases of anterior cruciate ligament (ACL) avulsion fracture from the tibia spine age of the patients ranged from 8-14 years old and were treated by open reduction and fixation. According to Meyer and McKeever classification, there were 5 type II, 13 type III. The average follow up period was 11.8 months .Lyshlom knee score was (47±13) preoperatively and (91±5) postoperatively (P 0.01). All patients fell stable on injured knee with negative the Lachman test, anterior drawer and the Pivot-shift tests, no cases of arthrofibrosis, residual laxity were recorded in two cases in this study. Conclusion: Open reduction and fixation of anterior cruciate ligament(ACL)avulsion fracture from the tibia spine is an effective method of treatment, as It profit to stable fixation and earlier exercise.

Abstract no.: 28364

LONG-TERM RESULTS AND RESIDUAL DEFORMITIES AFTER TREATMENT OF FIBULAR HEMIMELIA

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Aim: To present the long-term results and residual malformations after treatment of fibular hemimelia in seven patients. **Materials and Methods:** Seven patients received treatment for fibular hemimelia in eight limbs, as one patient presented bilateral involvement. The average Leg Length Discrepancy (LLD) at the initial presentation was 5.3 cm. The average projected LLD at skeletal maturity was 9.1 cm. Additional congenital deformities of the ipsilateral leg were present in all seven patients. All patients received appropriate treatment, while surgical interventions applied to six patients. The average post-treatment follow up was 10.5 years. Long term results, residual deformities and leg length discrepancy were recorded for all patients. **Results:** An average length of 5.06 cm (4 to 6 cm) was successfully obtained after lengthening procedures of the tibia and/or the femur. The Lower Extremity Functional Scale was significantly improved at the end of the follow-up measuring an average of 89.4% compared to pre-treatment measures (70.9% average). Residual average LLD of 3.1 cm was observed in five patients who completed surgical treatment. Four patients presented residual anterior-medial bowing of the tibia. Two patients presented a persisting valgus deformity of the ankle. All patients had a calf atrophy varied from mild to severe forms. Five patients presented a limp on walking. **Conclusions:** A high incidence of persisting residual deformities and reoccurrence of leg length discrepancy was recorded after long term follow-up. Despite the limited number of patients, these high rates may be indicative of the significance of the report, and of the right expectations one should have after fibular hemimelia treatment.

Abstract no.: 28367

SURGICAL TREATMENT OF THE CONGENITAL ANKLE JOINT MALFORMATIONS IN CHILDREN

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The objective of the study was to assess the effectiveness of surgical treatment of the congenital ankle joint malformations in children. Material included 57 patients from 1 year to 18 years, which were treated surgically by the methods, depending on clinical situation. Results: All children were divided into 3 groups on the base of anatomical principle. Group 1: 40 children with fibular or tibial hemimelia and secondary equinovalgus or equinovarus foot deformity. The method of treatment was open reduction of tibiotalar joint after release and lengthening of retracted tendons. In severe angular deformities of the calf bones correction of the axis with osteotomies was performed simultaneously or as a separate procedure. Group 2: 10 children - severe anomaly of ankle mortise with formation of so called "cleft ankle". In these cases restoration of ankle mortise was performed with staged protocol, which included correction of the position of the foot with distraction by Ilizarov external fixation device, and intermalleolar reconstruction with auto-and allografts. Group 3: 7 children with severe form of "ball-in socket" ankle with secondary deformity of the foot the modeling resection of talus and corrective subtalar arthrodesis. Follow-up period was from 1 to 10 years. Results were assessed clinically and radiologically. In most cases weight-bearing and walking abilities were restored and maintained. Range of motion was limited, but provided acceptable function. Orthotic devices were prescribed with relation to clinical situation.

Abstract no.: 28371

MOTOR ABILITIES OF CHILDREN TREATED FOR IDIOPATHIC CLUBFEET AT PRIMARY SCHOOL-AGE AND AGE MATCHED CONTROLS

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Introduction: Primary treatment goal for a child born with clubfeet is to correct the anatomical structures and normalize foot mobility. These corrections are, besides normalizing morphology, expected to influence activities and participation in daily life positively. **Objective:** This study aims to investigate, if children with corrected clubfeet perform the same as their age matched controls in motor tests. **Study design:** An observational matched paired control study. Children with clubfeet are asked to perform the six minutes walking test (6MWT), a sprint test (10x 5 m sprint-test) and a jumping test(horizontal jump). The functional status of the foot is measured with the Clubfoot Assessment Protocol (CAP). Pain and tiredness are indicated in the VAS and the Borg-scale. The general motor performance is measured with the Movement –ABC 2 test and the feeling of self-competence on motor abilities is measured with the CBSK-M. For statistical analyses the Mann Whitney U-test was used. **Study population:** 45 Children with anatomically corrected uni-or bilateral clubfeet between 4 and 12 years of age and no co-morbidity and their age matched healthy children. **Results:** The outcomes of the measurements of the studied population compared to their age mates will be presented and discussed.

Abstract no.: 28374

**CONVERSION MOTOR PARALYSIS DISORDER PRESENTING TO
ORTHOPAEDIC SURGEONS: A CASE REPORT**

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INTRODUCTION: Conversion Disorder (CD) is listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) as a psychological disorder, characterised by somatic symptoms with no organic basis. **CASE:** We report on the case of a young footballer referred to the orthopaedic team by the Emergency Department with bilateral lower limb paralysis, following a low-energy on-field collision. Examination findings demonstrated inability to perform hip flexion/extension, knee flexion, ankle plantar/dorsiflexion or greater toe plantar/dorsiflexion. However, inconsistencies appeared including inability to straight leg raise but unhindered use of quadriceps to extend the knee. The remaining neurological system was unremarkable. Blood analysis (including ESR), lumbar-spine radiograph and spinal MRI were normal. A neurologist assessed the patient at our request, but was unable to ascribe an organic cause to his condition. Meanwhile the patient was treated with physiotherapy, gradually regaining power with gentle mobilisation on day 5. He was discharged on day 8 having regained the vast majority of function. With no organic basis for his presentation found and no suspicion of malingering, a diagnosis of Conversion Motor Paralysis Disorder was concluded. **DISCUSSION:** This case highlights the possibility of inorganic causes for paralysis that present with a history of trauma. Although rare, disability due to a psychological mechanism should be considered when there are inconsistencies in the history or examination, imaging of the nervous system is unremarkable, and when the patient makes a dramatic recovery. The diagnosis requires certainty and therefore a multidisciplinary approach involving neurologists, physiotherapists and psychiatrists is recommended.

Abstract no.: 28375

**THE EFFECT OF SMOKING ON MOTOR FUNCTION RECOVERY AFTER
INTERCOSTAL NERVE TRANSFER TO MUSCULOCUTANEOUS NERVE
IN BRACHIAL PLEXUS INJURY**

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The inhibitory effects of smoking on tissue regeneration were reported in wound healing, fracture healing, microsurgical repair flaps or replantation. But there exist few comparative studies concerning nerve regeneration, especially motor function recovery. Intercostal nerve transfer (ICNT) is well-established method of reconstruction for elbow function in brachial plexus injury (BPI). The two intercostal nerves used for ICNT are intact and sutured to the recipient musculocutaneous nerve almost at the same level. So ICNT is an ideal as a clinical suture model for evaluating neural recovery. The aim of this study is to clarify the effect of smoking on motor recovery in patients of BPI treated with ICNT. Materials and methods: From 1990 to 2007, 147 cases were treated with ICNT and 53 cases who answered the questions concerning smoking were used for this study. (C5-6 5 cases, C5-7 9 cases, C5-8 8 cases, Total type 29 cases others 2cases) The period and amount of cigarette smoking before and after ICNT were explored and the effect for final recovery of MRC grading of elbow flexion was statistically analyzed. Results: There exists no difference between smoking and nonsmoking group concerning age, the interval from onset to operation. Smoking before operation has no effect on the recovery ($P=0.82$). On the other hands, smoking group after operation in total root type showed poorer recovery ($P<0.05$). Conclusion: Smoking after operation has inhibitory effect for motor function recovery of ICNT in total root type of BPI.

Abstract no.: 28376

**GRAM NEGATIVE INFECTION FOLLOWING PLATING OF TIBIA
RESULTED WITH EXPOSED BONE AND IMPLANT**

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We report four cases of gram negative infection following plating of the tibia that resulted in expose bone and metal implant which were treated in our center from March 2003 till December 2008. The incidence of Gram negative implant related infection is increasing and probably has poorer outcome. Treatment of this condition requires both bone and soft tissue reconstruction technique that is done in three stages (debridement, soft tissue reconstruction and bone reconstruction). All patient achieved union at the end of follow up. The mean union time is 9.25 months (ranges from 6 to 12 months) after the injury. At the end of follow up, only one patient had persistent infection but able to ambulate normally following fracture union).

Abstract no.: 28379

PULL-OUT SUTURE FIXATION OF POSTERIOR CRUCIATE LIGAMENT AVULSION FRACTURE USING BIO-ABSORBABLE SUTURE ANCHOR: CASE REPORT AND TECHNICAL NOTE

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Posterior cruciate ligament avulsion fracture is not an unusual injury. In displaced fracture, reduction and fixation are required to restore posterior cruciate ligament function and faster recovery. Initially, metal implants such as screw and staple are used for fracture fixation. Since problems in removal implants are frequently encountered, suture repair and pull out fixation with metal post in anterior upper tibia is then developed. With the improvement of bioabsorbable suture anchors, we have the idea of using bioabsorbable suture anchor for treatment of tibial eminence fracture. Seven patients (five male and two female, mean age: 28) were treated by this method. All of them were injured in traffic accident. The x rays revealed six Meyers and McKeever type III and one type I in these patients. The patient was put in prone position with application of air tourniquet. Posterior approach was used and the fracture site was exposed. A tunnel was created from fracture site to anterior tibia. A 5.0mm bio-absorbable suture anchor was inserted distal to the anterior tibia tunnel outlet and used as a post. The ethibond suture of the anchor was introduced through the tunnel and then through the holes which were drilled on the avulsion bony fragments and then tied for fixation. After casting for two weeks, function brace was used and protected range of motion exercise was allowed. All patients achieved bone union three months after operation. The patient has satisfactory recovery of knee range of motion and stability.

Abstract no.: 28380

**OUTCOME OF PATIENTS OLDER THAN 5 YEARS WITH CLUBFOOT,
TREATED WITH THE PONSETI METHOD**

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The purpose of this study was to describe the outcome of patients older than 5 years with clubfoot, treated with the Ponseti method, associate the age of treatment to the outcome and to correlate the severity of the deformity with the outcome. This is a cohort study of 13 patients older than 5 years treated with the Ponseti method, with a median follow-up of 22 months (IQR: 13) Age at treatment, Dimeglio grade and McKay score were analyzed. A McKay score below 125 was considered a poor result. Tests for normality were performed for dimensional scales, descriptive statistics are presented. Spearman's Rho correlation was carried out. A Fisher's exact test was performed for nominal variables, a p value of 0.05 was considered significant. Patients required a median of 6 casts (IQR: 5), all patients used and complied with the Dennis-Browne brace, all patients underwent an Achilles tendon lengthening and a posterior ankle capsulotomy. We found that of the 13 patients, 11 (84.6%) had a good result, (odds of having such an outcome was: 5.5). Age older than 10 years was not associated with a poor result ($p=0.487$). A negative significant correlation was found between the severity of the initial deformity (Dimeglio), and the functional outcome (McKay) with a Spearman's Rho = -0.743 ($p=0.004$) with a coefficient of determination of 0.345. Patients older than 5 years with clubfoot, treated with the Ponseti method have a good outcome, the odds in favor to a good result are 5.5. Older age (>10 years) does not associates with worst results. There exists a correlation between severity and outcome.

Abstract no.: 28381

STEM SUBSIDENCE AND STRAIN IN THE CEMENT OF POLISHED TAPERED FEMORAL STEMS VERSUS ROUGH STEMS

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Background: Researchers have shown that polished tapered stems slip in vivo in cement without cement damage. However, there have been no reports of continuous observation of stem subsidence. We compared continuous stem subsidence and cement strain in polished tapered stems with those in rough stems in a cemented total hip biomechanical model. **Materials and Methods:** Two sizes of double-tapered polished stems and of matte-processed polished stems (rough stems) were fixed into composite femurs, and a 1-Hz dynamic load was applied to the stems for a total of 2 million cycles. An 8-hour nonload period was set to occur after every 16 hours of load. The amounts of continuous stem subsidence and of cement strain were recorded automatically. **Result:** The stems subsided downward during the load periods but rose during the nonload periods. The final amount of subsidence in the polished stems was 1.229 mm in size 2 and 0.680 mm in size 3. Most of the total subsidence—85.8% for polished stems and 92.5% for rough stems—occurred by 1 million loading cycles; subsidence rates converged after that. For polished stems, cement strain was not synchronized with stem subsidence. For rough stems, however, subsidence progressed linearly and cement strain was synchronized with stem subsidence. **Discussion:** The convergence of stem subsidence rates and lack of synchronization with cement strain in polished stems might indicate taper slip and taper lock. This finding is consistent with slippage within the cement mantle and presumably protective against failure at the bone–cement junction. However, our findings revealed that the subsidence of rough stems was caused by early breakage of the bone–cement bond.

Abstract no.: 28382

**ARTHROSCOPIC SECOND-LOOK EVALUATION OF ACL
AUGMENTATION**

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Purpose: Recently several authors reported clinical outcome of ACL augmentation procedures. **Aim of this study** was to evaluate the 1-year follow-up clinical results, and second-look arthroscopic findings. **Methods:** Between July 2004 and September 2009, 1000 patients underwent arthroscopic ACL reconstruction. Among them ACL augmentation surgery using hamstring tendon autograft was done in 19 patients (1.9%). Anteromedial (AM) augmentation (Group A) were 5 cases, and Posteromedial(PL) augmentation(Group P) were 14 cases. Selection criteria for this procedure are remnant of one bundle of ACL having relatively good tension under arthroscopic evaluation and firm end point in Lachman test under clinically evaluation. All patients (7 male and 12 female; age range, 15 to 57years) underwent a second-look arthroscopic evaluation at 1 year after surgery. **Conclusion** was based upon result of clinical evaluation, the International Knee Documentation Committee (IKDC) evaluation, and second-look arthroscopic evaluation. **Results:** The side-to-side anterior laxity(Telos® device at130 N) was improved from 5.9mm(preoperatively) to 2.6mm in group A, from 4.5mm to 0.6mm in group P. The IKDC knee examination was normal in 13 cases and near normal in 6 cases. Grafts evaluated by second-look arthroscopy, most were considered to have good synovial coverage and to be taut. **Conclusions:** Arthroscopic ACL augmentation surgery is recommended for partial rupture of ACL bundle or incomplete healing with relatively good tension.

Abstract no.: 28383

EXPRESSION OF FOS PROTEIN IN THE SPINAL CORD AND HYPOTHALAMUS AFTER ACUTE ARTHRITIS IN THE C-FOS-MONOMERIC RED FLUORESCENT PROTEIN TRANSGENIC RATS

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The expression of the c-fos gene has been widely used as a marker of neuronal activity in the central nervous system (CNS). Recently, we generated transgenic rats expressing the c-fos and monomeric red fluorescent protein (mRFP) fusion gene in the CNS after adequate stimulation. By using this transgenic rat, it became possible to make the neuronal activity visible in the state of *in vivo* by tracing the mRFP fluorescence as an index, and we reported on the utility (Fujihara et al., Endocrinology 2009). Details are uncertain though expression pattern and kinetics of the mRFP fluorescence may be similar to those of Fos protein. Thus, we observed mRFP fluorescence by fluorescent microscopy and Fos protein by immunohistochemistry in the spinal cord and hypothalamus after acute arthritis caused by subcutaneous (s.c.) injection of formalin or saline in both hind paws of the c-fos-mRFP transgenic male rats and Wistar male rats. Abundant nuclear mRFP fluorescence and Fos-like immunoreactivities were observed in the dorsal horn of the spinal cord (L3-5,I,II) and the several central regions including the hypothalamic paraventricular nucleus in formalin-injected rats but a few in the saline-injected rats under fluorescent microscopy. Next, we tried to compare these in time course at 90 min, 3 h and 6 h after s.c. injections. This c-fos-mRFP transgenic rat is a new useful animal to study the central response in acute arthritis model.

Abstract no.: 28387

CHARACTERISTICS OF HYDRATION STATUS OF THE LUNGS IN SURGICAL CORRECTION OF SEVERE SCOLIOSIS

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Objective of the study was to assess hydration status of the lungs in surgical correction of severe scoliosis with different types of anesthesiological protection. Material and methods: Surgical results in 70 patients with severe scoliosis (Cobb angle 90-154 degrees) were analyzed. Group I included 35 patients operated under target-controlled infusion (TCI)-based total IV anesthesia (TIVA) using propofol, fentanyl, clofelin, and NMDA receptor blockade by sub-anesthetic ketamin doses; group II - 35 patients operated under general low-flow (1 l/min) sevoflurane anesthesia with similar other components. Mean age was 14.1 ± 5.8 years in the group I and 16.8 ± 5.5 years in the group II. All patients underwent multistage same-day surgery. Surgery duration was 203.3 ± 12.2 and 200.8 ± 21.9 min, intraoperative blood loss was $35.2 \pm 4.4\%$ and $27.0 \pm 3.0\%$ of blood volume, respectively. Hemodynamic and hydration status of the lungs was assessed using impedance cardiography (NICCOMO, Germany). Results: The study revealed a decrease in ventricular stroke volume (SV), cardiac index (CI), oxygen delivery index (ODI), and parameters of myocardial contractility, and an increase in systemic vascular resistance (SVR) without significant difference between groups. Extravascular fluid accumulation in lung interstitium was augmented over time in both groups, being the main reason for decrease in lung compliance by 29.0% ($p < 0.05$). Conclusion: The method of low-flow sevoflurane inhalation anesthesia is associated with less favorable hydration status of the lungs. This is an absolute risk factor for aggravation of initial respiratory failure in patients with severe scoliosis and should be considered in choosing a type of anesthesiological protection depending the planned volume and duration of surgical intervention.

Abstract no.: 28398

**EFFICACY AND SAFETY OF A SINGLE INTRAARTICULAR INJECTION
OF 2% SODIUM HYALURONATE + MANNITOL IN KNEE
OSTEOARTHRITIS OVER A 6-MONTH PERIOD**

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Objective: To evaluate the safety and efficacy of a single intraarticular injection of 2% hyaluronic acid (HA) + 0.5% mannitol in symptomatic knee osteoarthritis. **Methods:** A pilot, multicentre, open, non-comparative study was performed. Eighty patients with painful knee osteoarthritis were included. They received one injection of 2 ml of 2% HA + 0.5% mannitol (Day 0) and were followed-up for 6 months, with assessments on Days 0, 15, 30, 60, 90, 120, 150 and 180. Clinical evaluation of pain and joint function were performed using a visual analogical scale (VAS) and WOMAC index. The opinion of both the investigator and the patient on efficacy and safety was recorded. Rescue medication was also quantified. **Results:** A significant reduction in joint pain, stiffness and functional disability compared with baseline was observed at every follow-up visit ($p<0.001$), starting on Day 15. Joint pain improved by 40.7% (VAS) and 38.7% (WOMAC) on Day 30, reaching 46.5% and 47.5% on Day 180, respectively. Habitual rescue medication intake decreased from 58.2% at baseline to 2.5% on Day 90 and increased at the last visits. Efficacy and safety evaluations by investigators and patients were considered excellent throughout the study. No serious adverse events were observed. Mild side effects were reported on Day 15 in 4 patients (local pain and swelling in the area of infiltration). **Conclusions:** One single intraarticular injection of 2% HA + mannitol is effective in reducing pain and improving joint function in patients with knee osteoarthritis over a period of at least 6 months.

Abstract no.: 28399

EFFICACY OF IMMUNOHISTOLOGICAL METHODS IN DETECTING FUNCTIONALLY VIABLE MECHANORECEPTORS IN THE REMNANT STUMPS OF INJURED ANTERIOR CRUCIATE LIGAMENTS AND ITS CLINICAL IMPORTANCE

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Purpose: Identification of mechanoreceptors in remnant stumps of injured ACL might help us preserve certain remnant stumps during ACL reconstruction which might in turn improve functional outcomes postoperatively. However various histological/immunological methods used for the same lack standardization and variable thickness of slices used often leads to misinterpretation. We attempted to validate the methodology of immunohistology as means of characterizing functional mechanoreceptors in the remnant stump of an injured ACL.

Methods: The remnants of the ruptured ACL in 95 patients were harvested during arthroscopic ACL reconstruction and evaluated immunohistologically using Hematoxylin and Eosin (H&E), and monoclonal antibodies to S-100 and NFP. Multiple sections from each specimen were serially examined by two histologists.

Results: The positivity of monoclonal antibody against NFP showed a statistically significant relationship with the presence of morphologically normal mechanoreceptors (p value: 0.000) whereas the positivity of monoclonal antibody against S-100 showed a statistically significant relationship with the presence of free nerve ending in the residual stump of an injured ACL (p value: 0.000). However the positivity for monoclonal antibody to S-100 showed no relationship with the presence or absence of morphologically normal mechanoreceptors (p value 0.63). Higher degree of coherence amongst the two histologists was seen in the observations pertaining to immunological stains as compared to H&E (100% and 84.09% respectively). The inexperienced histologist was more likely to miss mechanoreceptors seen on H&E as compared to those detected using immunohistology.

Conclusions: We believe that immunological methods are more reliable and easier to use as compared to the tradition methods of histological staining for identifying remnant stumps likely to be of some proprioceptive benefit after an ACL injury. However, these methods still need to be all the more refined to be fully established as standard staining methods for the same.

Abstract no.: 28400

INHERITED THROMBOPHILIA MAY CORRELATE WITH DEVELOPMENT OF OSTEONECROSIS OF FEMORAL HEAD IN MALE PATIENTS WITH DEVELOPMENTAL DYSPLASIA OF THE HIP

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We aimed to assess the correlation between the development of osteonecrosis (ON) in developmental dysplasia of the hip (DDH) and two common causes of inherited thrombophilia; factor V Leiden mutation (FVL) and prothrombin gene mutation (PTM). The study group included 55 patients (42 females, 13 males; mean age 12.5 years) having ON following DDH treatment. The control group included 368 healthy adults without personal or familial history of thrombotic events from the same geographical area. The rates of FVL and PTM were similar between control and study groups. In the study group, the total rate of two common causes of inherited thrombophilia (FVL plus PTM) was nearly 4 times higher in male patients than in female patients. We thought that, this difference was mainly due to FVL as the rate of FVL was nearly 4.5 times higher in male patients than in female patients. The rate of PTM was nearly 3 times higher in male patients than in female patients. We conclude that inherited thrombophilia, primarily FVL, cannot be considered unique etiological factor for the development of ON in DDH but may superimpose the previously described risk factors for ON and facilitate the development of ON especially in males with DDH.

Abstract no.: 28401

PREDISPOSING FACTORS TO NEUROLOGICAL COMPROMISE FOLLOWING LUMBAR SPINAL PYOGENIC Spondylitis

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Introduction: Lumbar spinal pyogenic spondylitis is common rather than cervical or thoracic. However, its proper factors predisposing to neurological compromise are still unknown. **Objective:** To identify the factors predisposing to neurological compromise following lumbar spinal pyogenic spondylitis. **Methods:** 51 patients (35 males and 16 females, 67.8 ± 13.2 years) with lumbar spinal pyogenic spondylitis were enrolled. Neurological deficits (radicular pain, sensory disturbance, or weakness of the lower extremities, and voiding dysfunction) which appeared during the treatment were reviewed retrospectively. 12 patients were neurologically compromised (GC) and 39 were non-compromised (GN). For each patient, infecting organism (gram-positive or negative), associated illness (diabetes, heart disease, or malignancy), the maximum C-reactive protein (CRP), extra-discal abscess on MRI, number of the affected segments, the cross sectional area (CSA) of the canal at the affected segments were investigated. Univariate and multivariate analyses were performed to identify the predisposing factors to neurological compromise. **Results:** There was no significant difference between GC and GN regarding the incidence of gram-positive organism (GC: 50%, GN: 43.6%), heart disease (GC: 25%, GN: 15.4%), and malignancy (GC: 41.7%, GN: 15.4%), the maximum CRP (GC: $18.3 \pm 13.3 \mu\text{g/dl}$, GN: $13.8 \pm 10.9 \mu\text{g/dl}$), extra-discal abscess (GC: 58.3%, GN: 41.1%), number of affected segments (GC: 1.2 ± 0.4 , GN: 1.3 ± 0.7), the CSA of the canal (GC: $108.2 \pm 45.2 \text{mm}^2$, GN: $140 \pm 45.4 \text{mm}^2$). The incidence of diabetes is significantly higher in GC (GC: 66.7%, GN: 20.5%, $p=0.00077$). Multivariate analysis also indicated diabetes as a predisposing factor to neurological compromise ($p=0.005$, OR: 13.1). **Conclusion:** Diabetes is a predisposing factor to neurological compromise following lumbar spinal pyogenic spondylitis.

Abstract no.: 28403

ROTATIONAL STABILITY OF PFNA FOR HIGH SUBTROCHANTERIC FRACTURE FIXATION: A NAVIGATED MEASUREMENT

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Introduction: Effect of nail length and number of distal locking screw on rotational stability of subtrochanteric fracture constructs remain a controversy among orthopaedic surgeons. The present study compares rotational stability of the simulated subtrochanteric fractures stabilized by short and long PFNA. **Materials and Methods:** Simple transverse osteotomy was created at 2 centimeters distal to the lesser trochanter of twelve femoral saw bones to simulate high subtrochanteric fracture. Six of which were stabilized by short PFNA with single static distal locking screw while another six specimens were stabilized by long PFNA with 2 static distal locking screws. One millimeter of fracture gap was left open to minimize friction at the fracture site during the rotational study. Each femur was mounted in a custom made holding jig stabilizing the femoral head and condyle firmly but the condylar part of the jig was allowed for rotation. A computer navigation system was applied and the femoral anteversion was identified. 32 inch-Oz of internal and external rotation was applied to the femoral condyle by using a torque screw driver. Changing of femoral version presented on the navigation screen was recorded and compared between the different constructs. **Results:** Long PFNA with 2 distal locking screws has superior rotational stability compare to short nail with single distal locking screw in both of internal and external rotation ($p = 0.0001$ for internal rotation and $p = 0.001$ for external rotation). **Discussion:** Number of distal locking screw is an important factor influencing rotational stability of subtrochanteric fracture construct stabilized by intramedullary implant. Toggling occurred between distal screw and screw hole may cause rotational instability. Two distal locking screws provides better rotational stability than single screw does.

Abstract no.: 28408

MINI OPEN ORIF IM NAILING STATIC INTERLOCKING IN THE TREATMENT OF FEMORAL SHAFT FRACTURES: A PARADIGM SHIFT?

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Femoral shaft fracture one of the most common orthopedic injuries, accounting for approximately 14% of all extremity fractures. It is commonly caused by high energy trauma. Intramedullary (IM) nailing has become the universal standard for the treatment of these fractures. IM nailing can be done by closed technique, mini open technique or traditional open technique. This study was thus conducted to compare the Traditional Open Technique vis-à-vis the Mini-Open Technique with SIGN Nail in the treatment of femoral shaft fractures. A retrospective cross-sectional study was conducted to determine some of the advantage of mini open technique over traditional open technique in the treatment of femoral shaft fractures treated at the Department of Orthopedics, Southern Philippines Medical Center from January to October 2010 using SIGN Nail. The study included 63 patient-charts that were available for review. Results show that 71.4% of the patients were treated with traditional technique and 28.6% of the patients were treated with mini open technique. All patients treated with mini open had blood loss less than 599 cc and had knee range of motion more than 90 degrees in 2 weeks follow up. Patients treated with traditional open technique 33.3% of patients had blood loss than 600 cc and 20% patients had knee range of motion less than 90° in 2 weeks follow up. Majority (77.8%) of patients treated with mini open had no pain in 2 weeks follow up, but in open technique 62.2% patients had positive pain in 2 weeks follow up. The duration of surgery between both techniques was almost the same. The study further shows that femoral shaft fractures patients treated with mini open had less blood loss, greater range of motion, and less pain.

Abstract no.: 28411

HOW LONG SHOULD CHEMICAL ADJUVANTS BE LEFT IN THE TUMOUR CAVITY DURING SURGERY FOR GIANT CELL TUMOURS?

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Introduction: In Giant cell tumour, success depends on local recurrence rate. Chemical adjuvants have been used to reduce recurrence. The time duration for adjuvants to act is not known. This study assessed the contact time needed for adjuvants to cause tumour necrosis.

Materials and Methods: Fresh tumour cells from eleven patients with giant cell tumours were used. Protocols were standardized with pilot study. Tumour tissue was placed in five containers. One served as control. Hydrogen peroxide, anhydrous alcohol (90%), 80% phenol and distilled water were added. Samples from each were obtained at one, three, six and ten minutes and fixed in formaldehyde. The slides were stained using Haematoxylin and Eosin. Assessment was done by a pathologist who was blinded. Light microscopy was used to assess cell death and depth of penetration of chemical adjuvant. Cell death was defined as autolysis, loss of architecture and coagulative necrosis. The effect was classified as patchy or consistent. Final analysis was done on nine specimens using Chi square test and p value less than 0.05 was considered significant.

Results Among adjuvants tested, only phenol showed consistent effect. At six minutes of exposure to phenol, all nine specimens (100%) showed consistent cell death (p value < 0.0001). The depth of penetration was an average of 15 cell thickness.

Conclusion: A contact time of six minutes when using phenol as a chemical adjuvant will cause consistent cell death. The contact time for other adjuvants should be studied by other assessment techniques.

Abstract no.: 28412

**THE FEATURES OF THE COMPUTER-ASSISTED ORTHO-SUV FRAME
AND OPPORTUNITIES OF IT CLINICAL USE**

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Aim: To estimate of the computer based Ortho-SUV Frame (<http://www.rniito.org/download/ortho-suv-frame-eng.pdf>). Methods: Construction features, reduction capabilities, rigidity of bone fragments fixation, comfort of hardware, software use and clinical efficiency were estimated on the base of 270 series of bench tests and 114 cases of Ortho-SUV application. Results: In Ortho-SUV 1/2, 2/3 and 5/8 ring supports any shape and geometry can be used. The supports can be assembled in any plane. The places for strut fixation to the ring are chosen by the surgeon. It allows inserting the transosseus elements in reference positions (<http://rniito.org/solomin/download/atlas-engl.zip>) without danger of strut-pin contact. It's possible to fix the struts not only to basic but also to stabilizing supports using single or Z-shaped plates. Reduction tests show that Ortho-SUV Frame capabilities are higher than in analogous. The rigidity of the construction is not lower than in Ilizarov device. Software of Ortho-SUV Frame differs from the analogous by well-thought-out interface, system of mistake control, which excludes the possibility of invalid data entering. The x-ray films are loaded into the software; it is possible planning of deformity correction directly in the software. Ortho-SUV was used in treatment of 85 cases of long bone deformities, 13 fractures, 9 foot deformities, 7 knee joint stiffness. In all the cases one-step deformity correction (fracture reduction) was achieved. The complications didn't exceed the number traditional for ExFix by Ilizarov. Conclusion: Clinical application of Ortho-SUV Frame allows making the fracture reduction and deformity correction at qualitative new level. The training courses of Ortho-SUV are available: <http://www.rniito.org/download/ortho-suv-course-9-eng.pdf>.

Abstract no.: 28413

OPTIMAL SOFTWARE BASED ORTHO-SUV FRAME ASSEMBLY FOR DEFORMITY CORRECTION OF DISTAL THIRD OF FEMORAL BONE

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Aim: To develop optimum Ortho-SUV Frame (<http://www.rniito.org/download/ortho-suv-frame-eng.pdf>) assembly for deformity correction and fracture healing of distal third of femoral bone shaft. Material: On the basis of 360 bench tests dependence of Ortho-SUV Frame reduction possibilities (distraction, translation, angulation, rotation) from diameter of external supports, distance between them and places of struts fixing were investigated. The method of the unified designation of external fixation was used at the description of frame configurations (<http://rniito.org/solomin/download/mudef.zip>). For wire and pin insertion Reference Position were used (<http://rniito.org/solomin/download/atlas-engl.zip>). The osteosynthesis rigidity was examined too. The developed configurations were approved at treatment of 16 patients. Results: Optimal positions for struts fixation are the following: - to proximal support for strut #1 - position 2, for strut #3 - between positions 5 and 6 and for strut #5 - position 10. - to distal support for strut #2 - position 4, for strut #4 – position 8, for strut #6 - position 12. Maximum reduction capabilities are available for frame assembly in which distance between supports is 150-200 mm: 48-85 mm translation, 18-50 degrees angulation, 10-47 degrees rotation. Use of Z-shaped plates for struts #1 and #5 fixation increases reduction capabilities by 11,4-25,5%. It is enough for correction of difficult kind of deformations (http://rniito.org/solomin_eng/deform_class.jpg). Researches have shown that this frame configuration provides rigidity not less, than Ilizarov device is. In all cases of Ortho-SUV Frame clinical application right bone fragment position were achieved. Conclusion: Preliminary researches have shown that Ortho-SUV Frame is perspective ExFix device for femoral bone deformity correction.

Abstract no.: 28416

RESULTS OF OVERHEAD TRACTION FOR DEVELOPMENTAL DYSPLASIA OF THE HIP

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(Aim) Our aim was to investigate the mid-term treatment outcome of overhead traction (OHT) in the patients with developmental dysplasia of the hip (DDH). (Methods) Five girls with 6 hips were included in this study. Teratological, paralytic, or septic dislocations were excluded. OHT was used in the patients who had failed to retain the hip in the reduced position after using the Pavlik harness. We used horizontal traction just before OHT until the dislocated femoral head being pulled down to the same level with the normal hip. The mean age at the time of OHT was 9.5 months (6-18 months). Immediately after reduction, a hip spica cast was applied under general anesthesia and was continued for one month, and followed by the use of the positioning brace for one month. We investigated the duration of OHT, the complication rate, and the incidence of avascular necrosis (AVN) of the femoral head. The mean duration of follow-up was 6.7 years. (Results) The mean duration of OHT was 58 days (41-78 days). All hips showed a closed reduction by OHT, but two hips (33.3%) re-dislocated in the spica cast. One hip was treated with closed reduction and with the positioning brace, and the other needed open reduction. One hip (16.7%) showed the evidence of AVN. (Discussion) Sufficient period of horizontal traction is important to treat joint contracture before OHT, because re-dislocation occurred in 2 patients with the shorter period (17 days) compared with the successful group (28 days).

Abstract no.: 28423

TUBERCULOSIS OF THE SPINE: A FRESH LOOK AT AN OLD DISEASE

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The dismal outcome of tuberculosis of the spine has improved significantly by potent antitubercular drugs, modern diagnostic and advances in surgical management. MRI allows the diagnosis of a tuberculous lesion, with a sensitivity of 100% and specificity of 88%, well before deformity develops the contagious vertebral body lesions, subligamentous paravertebral abscess preservation of disc, intraosseous and epidural lesions are consistently found on MRI in TB spine. Neurological deficit and deformity are the worst complications of spinal tuberculosis. Patients treated conservatively show an increase in deformity of about 15°. In children, a kyphosis continues to increase with growth even after the lesion has healed. The lesions should be suspected, diagnosis and treated in a predestructive stage to prevent development of deformity. Tuberculosis of the spine is a medical disease which is not primarily treated surgically, but operation is required to prevent and treat the complications. Panvertebral lesions, therapeutically refractory disease, severe kyphosis, a developing neurological deficit, lack of improvement or deterioration are indications for surgery. The instrumented stabilization is indicated in panvertebral disease, long segment vertebral body disease or when kyphosis correction is contemplated. Patients, who present with a kyphosis of 60° or more, or one which is likely to progress, require correction of kyphosis. The sequential steps for correction of kyphosis are anterior decompression, posterior shortening, posterior instrumented stabilisation, and anterior and posterior bone grafting done as single procedure in the active stage of the disease. Late-onset paraplegia is best prevented rather than treated. The awareness and suspicion of an atypical presentation of spinal tuberculosis should be high in order to obtain a good outcome. Therapeutically refractory cases of tuberculosis of the spine are increasing in association with the presence of HIV and multidrug-resistant tuberculosis and we need to devise strategies to treat them.

Abstract no.: 28424

CORRECTION OF KYPHOSIS IN TB SPINE – A REPORT OF 40 CASES

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Late-onset paraplegia is best avoided by correcting severe kyphosis in the active, healing, or healed stages of spinal tuberculosis. Forty patients with dorsal(n-20) , dorsolumbar(n-17), lumbar(n-1) and lumbosacral (n-2) spinal TB ,twenty four with paraplegia, sixteen without paraplegia underwent kyphus correction. Twenty eight patients had active, ten partially treated, and two healed disease. The mean age was 23 years (range 3 to 38 years) and mean kyphosis was 58.5° (range, 35°–76°). Mean vertebral body involvement on CT was 4.3 (2–9), and mean initial vertebral body loss was 1.87 (1–2.6). The dorsal and DL spine (n-37) were operated by extrapleural anterolateral approach by “T” incision without cutting diaphragm and opening the pleural cavity. The sequential steps for kyphus correction were anterior corpectomy, shortening of the posterior column, posterior instrumentation and anterior gap grafting, and posterior fusion. These spines were stabilized by hartshill instrumentation. Lumbar and LS lesions were operated by midline incision and stabilized with hartshill and pedicle screw fixation respectively. All were given full course of ATT and supported with body jackets. Minimum followup was 9 months (range, 9–60 months). All but one patient with neural deficit showed complete neural recovery while two pts had wound breakdown. Mean kyphosis correction was 27.3° (range, 9°–42°). Mean correction loss on 1-year followup was 1.4° (range, 0°–4°). The correction of kyphosis can be achieved by single stage extrapleural approach in dorsal and dorsolumbar tubercular lesions and by pedicle subtraction in lumbar and LS lesions.

Abstract no.: 28428

UNDERSTANDING PSYCHO-SOCIAL ISSUES IN PERSONS WITH SPINAL CORD INJURY AND IMPACT OF REMEDIAL MEASURES

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Objective: The present study aimed to assess these psycho-social problems of patients with SCI, taking remedial measures to minimize these problems, and to evaluate the impact of these measures. **Method:** Fifty persons with SCI were assessed for various psycho-social issues, remedial measures were taken to address them, and follow-up assessment was performed 6 months later to examine the impact of these over time. **Results:** 14% patients were having psycho neurogenic problems. Erectile dysfunction in male SCI patients was observed in 44.5% and ejaculation dysfunction in 60.1%. Four female patients were having sexual dysfunctions. The social adjustment was good in 29, average in 10 and poor in 11 patients. 22% patients were suffering from Post traumatic stress disorder. 34% patients had severe burden on the family. 32% patients were having uncordial relationship to their partners. 34% patients were able to do their job or work at home. 52% patients were not mobile and had nil autonomy. Twenty patients had sleep disturbances. Various remedial measures taken to address these issues showed good results after six month follow-up. **Conclusions:** The present study highlights that the effects of SCI on the areas like psychology, sexual functions, social adjustments, burden on family, partner relationships, and sleep disturbances are quiet evident; and that simple instructions and interventions can decrease these complications. Accurate description of specific problems faced by these individuals provides an opportunity for modification of each patient treatment program and directs the therapeutic approach; thus enhancing psycho-social life of patients with SCI. **Key words:** Spinal cord injury; Psycho-social; Social adjustment; Autonomy; Mobility; Burden on family.

Abstract no.: 28429

IMPROVISATIONS IN FLAPS FOR SUCCESS IN RECONSTRUCTIVE SURGERY FOR PRESSURE ULCERS IN SPINAL CORD INJURY PATIENTS

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Objective: Pressure ulcers (PUs) are reported as the most frequent secondary medical complications in patients with SCI. We present our experience of improvisations in flap surgery in the management of PUs for a successful outcome. **Methods:** Thirty five patients (23 male and 12 females) of SCI with pressure ulcers (stages III and IV) were treated with various flaps depending on the site and size of PU. We modified the techniques of classic flap surgery by giving multiple dermal incisions (all), bilateral longitudinal incisions (2), modified slide in flap (6), interdigitating flap (15) and proximal femurectomy packing the cavity with the muscle and flap(3) depending on the needs. **Results:** The results of the flap surgery were excellent in 32 (91.44%) patients, good in 2(5.71%) and poor in one (2.85%) patients. There were 8 minor complications including short flaps, skin grafting problems, and hematoma collection. The general improvement in health and QOL assessed in terms of improvement in subjective well being, hemoglobin, serum proteins and QOL score (VAS) also showed improvement on final evaluation. **Conclusions:** Certain improvisations to classic and modified techniques of flap surgeries help in decreasing tension in the flap and along the suture line; decreasing flap necrosis and wound dehiscence complications; increasing flap size; and thus improving the ultimate outcome of the reconstructive surgery in PUs. **Key Words:** Spinal cord injury; Pressure ulcers; Flap surgery.

Abstract no.: 28430

ROLE OF AUTOLOGOUS PLATELET RICH PLASMA FOR MANAGEMENT OF EXTENSIVE PRESSURE ULCERS IN PATIENT WITH SPINAL CORD INJURY

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Objective: Pressure ulcers (PU) in patients with spinal cord injury (SCI) are frequent problem and often difficult to heal. The purpose of the present study was to collect evidence regarding role of autologous platelet-rich-plasma (PRP) for topical treatment of extensive PUs. **Method:** 7 patients with at least 2 PUs (one as Case & other as Control) were taken up for the study. All case PUs were Grade IV. Case PUs were dressed with twice weekly PRP dressings and control dressed daily with normal saline for 5 weeks. PU healing was recorded on pressure ulcer healing scale (PUSH) and histopathologically by biopsy on initial day, first, third and fifth week. **Results:** 4 case PUs improved by at least one grade & 1 by two grades; and also on PUSH scale. PUSH scale improved from 15.7 to 14. Histopathologically all PUs showed signs of healing. Where as 5 control PUs deteriorated or remained in same grade with not much signs of healing and improvement in PUSH scale. **Conclusions:** The promising observations of this study indicate sufficient role of autologous PRP in chronic extensive PUs in patients with SCI. The treatment with PRP is safe, effective, and mimics natural wound healing. **Key words:** Pressure ulcers; Autologous platelet-rich-plasma (PRP); PUSH scale.

Abstract no.: 28432

CT- BASED THORACIC SPINE MORPHOMETRY IN INDIAN POPULATION AND ITS CLINICAL IMPLICATIONS

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Purpose: To collect a base line morphometric data of thoracic spine and analyze it in reference to the musculoskeletal anatomy & biomechanics of the spine; and implants & instrumentations available for spinal surgery. **Methods:** CT scans of thoracic spine of patients free from spinal disorders were reviewed in total of 600 vertebrae in 50 patients. Parameters recorded were pedicle width, length and height; transverse pedicle angles; chord length; canal dimensions; body width and height; spinous process angle; transverse process length with help of computer software. **Results:** Pedicle width decreased from T1(9.27 ± 1.01) to T4(4.5 ± 0.93) and increased to T12(8.31 ± 1.83); length was minimum at T4 (11 ± 1.34) and height increased from T1(11.23 ± 1.3) to T12(18.04 ± 1.33). Transverse pedicle angle decreased from T1(35.4 ± 2.21) to T12(-9.8 ± 2.39). Chord length was largest at T10(60.1 ± 3.45). Canal dimensions were narrowest at T4/T5 (20.02 ± 1.23) in anteroposterior and 21.12 ± 1.23 in interpedicular diameters. Spinous process angle increased from T1(30.11 ± 6.74) to T6 (57.89 ± 9.31) and decreased to (16.21 ± 7.38) at T12. Transverse process length increased from T1-T7 ($23.54 + 2.12-31.21+ 1.91$) and then decreased to ($12.11+ 2.3$) at T12. Body dimensions showed increasing trends from T1-T12. **Conclusions:** Most trends in changes of parameters from T1 to T12 can be explained on the basis of local musculoskeletal anatomy and biomechanical stresses. The smallest diameter screw and shortest available screw for adults are not safe in majority of the Indian population in mid-thoracic region. The results of study can help in designing implants and instrumentations; understanding spine pathologies; and management of spinal disorder in India.

Abstract no.: 28435

**EFFECTS OF BOTULINUM TOXIN A ON FRACTURE HEALING IN RATS:
AN EXPERIMENTAL STUDY**

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Objectives: Fracture healing is a complex process influenced by intrinsic and extrinsic factors. The aim of the present study was to evaluate the effects of botulinum toxin A, which causes transient flaccid paralysis by blocking acetylcholine release at the presynaptic nerve terminal, on fracture healing. **Methods:** Following induction of bilateral standard closed femoral fractures and relative fixation in 18 Wistar-Albino rats, 8 IU of botulinum toxin A was injected into the right femoral region. After 28 days, all of the rats were sacrificed and the diameter of the callus was measured and fracture healing was assessed by biomechanical and histopathologic evaluation. **Results:** While an increase in biomechanical and histopathologic healing was noted on the side of the botulinum toxin A injection, a decrease in callus diameter was observed. Botulinum toxin A administration increases the healing power in a relatively fixated fracture and decreases the callus diameter as if rigid fixation had been performed. **Discussion/Conclusion:** The beneficial effect of botulinum toxin A on fracture healing might be associated with increased fixation rigidity.

Abstract no.: 28440

BILATERAL CAPITELLUM HUMERUS FRACTURE

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We report a case of a 61-year-old female who suffered a bilateral isolated capitellum humerus fracture (Hahn-Steinthal type) after a fall from a height. A Kocher approach was used to obtain open reduction and internal fixation. Extraarticular insertion of Herbert screws was performed. Both elbows were immobilised for two weeks before commencing self supervised mobilization and after six weeks a mobilization program guided by a physiotherapist. At three months follow-up both elbows were pain-free with a 10 degrees loss of extension in the right elbow and full extension in the left one. Flexion was completed in both of them. Based on a review of the literature (only three reports of such cases) we recommend early mobilization after anatomic reduction and stable fixation with Herbert screws placed from posterior to anterior. They provide interfragmentary compression and avoid damage to the articular surface.

Abstract no.: 28441

POSTTRAUMATIC NONUNION IN LONG BONES OF THE UPPER EXTREMITY: BIOLOGICAL ACTIVITY AT THE GAP AND PROSPECTIVE FUNCTIONAL RESULTS

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Introduction: Little is known about the biological activity present at the gap in nonunions of the upper extremity, and there is no precise information concerning the real impairment that results from upper extremity nonunions. The objective was to evaluate the correlation between radiology, histology and immunohistochemistry; and prospectively evaluate the results achieved in nonunions of the upper extremity treated surgically. **Materials and Methods:** Forty-one patients with post-traumatic nonunions affecting the long bones of the upper extremity and treated surgically between 2004 and 2007 were prospectively evaluated. Patient's age averaged 41.6 years. Time between initial trauma and definitive surgery averaged 12.45 months. Thirty-five patients had previous surgical treatment. **Results:** Follow-up averaged 16.8 months. Time until bony union averaged 4.63 months. Constants score averaged 84.96 points; DASH score averaged 12.79 points. There was no concordance between radiology and IHQ, neither between radiology and histology, or between IHQ and histology. DASH score, Constant's score and the analog scale of pain showed significant improvement. There were no statistically significant differences between vital and non-vital nonunions, and between smokers and non smokers. Patients with previous surgeries presented a preoperative subjective evaluation significantly worse than patients without previous interventions. Patients younger than 50 years achieved a Constant score significantly higher than older patients. **Discussion:** This series of patients showed lack of concordance between radiographic, histological and IHQ evaluations. In general, good percentage of blood vessels was detected in all types of nonunions, but vascular endothelial growth factor was scarce. Union was obtained in forty cases. Statistically significant subjective and objective improvement was achieved in all cases.

Abstract no.: 28442

TREATMENT OF FEMUR FRACTURES IN CHILDREN WITH IMMEDIATE INCORPORATED HIP SPICA CASTING BY DOUBLE PIN

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The immediate hip spica casting is a popular treatment method for the pediatric age group femoral fractures. Femoral shortening is the unacceptable result for the treatment. In this technique we tried to describe immediate spica casting technique pinning with double K-wire in children and evaluate the results obtained from patients treated with this method. Twenty-six patients were (14 boys and 12 girls) treated with this technique under general anesthesia in the operating room. Mean age was 6.3 years (range 4-8 years), 18 fractures were on the right side and six on the left side. First K-wire of 2.5mm was introduced in the supracondylar of femur passing from the lateral to the medial side through both cortices, and protruded through the skin in the medial section. A second K-wire of 2.5mm was introduced through the lateral side of proximal fragment and it was allowed to pass only 1-2mm through the second cortex. While an assistant was applying traction to the pin to maintain the reduction, lower extremity was put in a spica cast on the fractured side, while the knee joint on the other side was excluded from the spica casting process. The angulation after hip spica cast applied was 9.8° (range 7°-12°) on the frontal plane and 10.8° (range: 5°-17°) on the sagittal plane. After spica cast removal, it was 9.3° (range: 5°-13°) on the frontal plane and 12° (range: 6°-17°) on the sagittal plane. No significant difference was found. Immediate spica casting with double pinning may be an effective method for femoral diaphyseal fractures in children.

Abstract no.: 28450

TRAUMATIC THUMB AMPUTATIONS: PRINCIPLES AND RESULTS

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Background: The objective of this paper is to establish the actual principles of primary treatment in traumatic thumb amputations and to evaluate the results achieved in their treatment. **Methods:** 25 patients that suffered complete or incomplete amputations of their thumbs between 2004 and 2009 were retrospectively evaluated. Eighteen patients had complete thumb amputation (seven distal to the lunula), and seven had incomplete amputations. Seventeen had clear cuts, six were avulsion or degloving injuries, and two had compression injuries. Patient's age averaged 32 years. Ischemia time averaged seven hours. The thumb was replanted in eleven cases, it was revascularized in seven, in four cases Moberg's advancement flap was performed and in three a pedicled neurovascularized island flap was used. Seven cases needed a by-pass. **Results:** Follow-up averaged 20 months. Three replants failed. Four patients needed secondary pedicled island flaps. All patients recovered protective sensation, and 17 returned to their previous activities. Six patients refer cold intolerance. DASH score averaged 20 points. **Conclusions:** In the presence of a traumatic thumb amputation good aesthetic and functional results can be achieved by: an adequate selection of the best reconstructive procedure according to the level of amputation, a meticulous microsurgical technique, a precise repair or reconstruction of the injured structures, adequate coverage of the repaired tissues, and specialized physiotherapy.

Abstract no.: 28453

THE USEFUL OF THE SHAFT-CONDYLAR ANGLE IN SURGICAL TREATMENT OF NEGLECTED AND DISPLACED LATERAL CONDYLAR FRACTURE OF THE HUMERUS IN CHILDREN

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Ten children with displaced lateral condylar fracture of the humerus more than 3 weeks were reviewed for the treatment. Open reduction and internal fixation with Kirschner wires was performed. The shaft-condylar angle measuring on the lateral radiograph of the elbow was modified to use intra-operatively by visual approximation and confirmed by goniometer. The fixation with the shaft-condylar angle at nearly 40 degrees, the nearest anatomical carrying angle and the restoration of articular surface were used as the optimal goal. The average time to surgery was 9 weeks. The average duration of follow up was 3.7 years. The bony union occurred in all cases. Neither avascular necrosis nor varus deformity was observed. The movement of the elbow was improved in all cases with full range of motion in six cases. The functional grading was excellent in all cases and the overall grading was good and excellent in nine cases. The average shaft-condylar angle on follow up was 47.7 degrees. In the cases with less than 50 degrees of this angle revealed the full range of motion of the elbow whilst the cases with more than 60 degrees showed limitation of extension. The results demonstrated the useful of the shaft-condylar angle in surgical treatment of neglected and displaced lateral condylar fracture of the humerus in children.

Abstract no.: 28455

**ULNAR HEAD EXPOSURE AND COMPLETE SOFT-TISSUE
DETACHMENT IN GALEAZZI FRACTURE DISLOCATIONS**

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We report the results after surgical treatment in four Galeazzi fracture dislocations in which the ulnar head was exposed with complete detachment of its soft tissues. The lesions were Gustilo and Anderson type II in three cases and type IIIA in the remaining case. Tolette, thorough debridement, and primary open reduction and internal fixation (ORIF) were performed within 12 hours of admission in all four patients. One patient was treated using a dynamic compression plate (DCP) and autologous bone graft for the fractured radius, with tension band wiring on the ulnar styloid; a second patient was stabilized using a low contact DCP on the radius and a kirschner wire was driven from the ulna to the radius at their distal third, blocking pronosupination (for 3 weeks); a third patient was treated only with 2 kirschner wires through the radial styloid, and the last patient was stabilized with a long locked volar plate for the radius. In one case, removal of the 4th, 5th and 6th wrist extensor compartment tendons, interposed at the distal radioulnar joint (DRUJ) was necessary. Capsular and ligamentous structures avulsed from the ulnar head were sutured in all cases. Follow up averaged 46,5 months. All patients returned to their previous activities, none referred pain at rest, two referred pain during forced activities. Wrist extension average 65° and wrist flexion averaged 62°. DASH score averaged 8 points. None of them presented distal radioulnar joint instability, osteoarthritis, infection or neurological complications. The decision weather to stabilize or not the ulnar styloid should be made intraoperatively after stabilizing the radius fracture; when signs of instability remain, ulnar styloid reattachment is recommended; if the joint is stable, suturing the capsule and ligamentous structures around the ulnar stump allowed achieving a stable joint and adequate motion without pain.

Abstract no.: 28457

**BIOMECHANICAL VIOLATION OF LOCKING PLATE OSTEOSYNTHESIS
– A REPORT OF TWO FAILURES**

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Background: Over the past few years, plate osteosynthesis designs have evolved. Locking Compression Plate system (LCP) has been a popular option for treating fractures. Literature has shown that LCP provides superior fixation and stability. However, violation of the biomechanical principles in the application of the plate can lead to fixation failure. We report 2 cases of failures. **Cases:** Both cases involved the femur. The first case was plated using a short locking plate with a screw through the fracture site. This resulted in plate breakage at three months. Revision of the fixation with a plate was performed in adherence with biomechanical considerations which lead to satisfactory clinical outcome. In the second case, a short locking plate was used on a bowed femur. Secondary fracture in the distal fragment was observed at three months. An intramedullary device was used as a revision procedure to achieve union. **Discussion:** In the first case, a short working length and subsequent placement of a screw through the fracture site made the fixation rigid. This caused delayed union which resulted in plate breakage upon weight bearing. For the second case, the femur had higher tensile forces on the convex side due to significant bowing. Hence, fixation with a short working length resulted in plate pull out upon weight bearing despite fracture union. This caused a stress riser at the distal segment which propagated a secondary fracture. **Conclusion:** Applying the biomechanical principles in a LCP fixation is of paramount importance. Therefore, detailed preoperative planning is mandatory for stable fixation and a successful outcome.

Abstract no.: 28458

ACETABULAR DEFICIENCY IN SPASTIC HIP SUBLUXATION

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Background: The direction of spastic hip subluxation is generally agreed to be posterolateral; however, the location of acetabular deficiency is still controversial. This study aims to define the degree and location of acetabular deficiency that is crucial in choosing acetabuloplasty method. **Methods:** Twenty-five children with spastic cerebral palsy, average aged 7.1 years (4.4 to 9.6 years), underwent 3-dimensional computer tomography studies of the pelvis. Mean Reimer's migration percentage (MP) of the 50 hips was 32.6% (16% to 66%). 28 hips were non-subluxated and the other 22 hips were subluxated (MP>30%). The 3-D image of pelvis was realigned and a series of nine section planes were formed to represent each direction of the acetabulum from anterior 60° to posterior 60°. The acetabular index was measured and compared to define the deficiency. The data of 5 children without neuromuscular disease or hip problem was retrieved as control. **Results:** Acetabular indexes in spastic nonsubluxated hips and normal hips were similar. The differences of acetabular indexes between spastic subluxated hips and normal hips were 14.8° (A60°), 11.2° (A45°), 10.8° (A30°), 9.9° (A15°), 9.7° (0°), 9.5° (P15°), 9.8° (P30°), 9.8° (P45°), and 5.3° (P60°) ($p<0.05$). The regression showed positive linear relationship between MP and 3D acetabular index and the slope in anterior acetabulum was greater than that in the posterior acetabulum. **Conclusion:** The definition of a disorder should be based on the deviation from normal physiological status. Acetabular dysplasia in spastic hip subluxation is global and more apparent in the anterior aspect.

Abstract no.: 28459

PREDICTIVE VALUE FOR FEMORAL HEAD SPHERICITY FROM EARLY RADIOGRAPHIC SIGNS IN SURGERY FOR DEVELOPMENTAL DYSPLASIA OF THE HIP

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Purpose: Osteonecrosis is a serious complication following treatment for late developmental dysplasia of the hip (DDH). The purpose of this study was to define factors that could predict the outcome of femoral heads with early signs of osteonecrosis.

Methods: Thirty patients with unilateral DDH treated by the same operation before 3 years of age who developed early signs of osteonecrosis were studied. Osteonecrosis was diagnosed by either broadening of the femoral neck, fragmentation of the capital epiphysis, or the presence of a metaphyseal growth disturbance line in the first postoperative year. After 10-year follow-up, the hips were classified into spherical head or deformed head to analyze the associated factors. **Results:** Sixteen hips had spherical femoral heads and the other 14 hips had head deformity. Age, sex, side, Tonnis classification, preoperative or postoperative acetabular index were not associated with the outcome after osteonecrosis. Among the early signs of osteonecrosis, fragmentation of the capital epiphysis was significantly associated with later head deformity. Fragmentation was a sign with high sensitivity (79%) and high specificity (88%) in predicting a deformed head. Broadening of femoral neck had a high sensitivity (93%), but a low specificity (38%) in outcome prediction. **Conclusion:** Fragmentation of the capital epiphysis was a significant predictor of femoral head deformity. Broadening of the femoral neck exhibited high sensitivity in predicting later deformity, and should be warning of subsequent epiphyseal fragmentation. The metaphyseal growth disturbance line was of little clinical significance.

Abstract no.: 28460

QUALITY OF LIFE ASSESSMENT IN CEREBRAL PALSY ADOLESCENTS

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Introduction: Quality of life (QOL) is a measure of wellbeing by subjective perception of daily life. Disorders in body and motor function are the reasons of treatment in cerebral palsy, but how these disorders affect QOL is still unknown. The aim of this study was to investigate the relation of QOL with motor disorders in adolescents with cerebral palsy.

Materials and methods: A cross-sectional analysis was performed in 69 adolescents with cerebral palsy. The mean age was 12.7 years (9-17). Gross motor function were level I (35%), II (33%), III (19%), IX (6%), and X (7%). Cerebral Palsy Quality of life Questionnaire for caregiver was completed by the parents. Body and motor functions were evaluated by body mass index, range of joint motion, spasticity, muscle strength, and selective motor control. The association between QOL and body/motor function was tested by Pearson's or Spearman's correlation. **Results:** QOL scores had low or non-significant correlation with body and motor function. Significant correlation was found in participation vs. selective motor control, access to service vs. muscle strength, pain/bother vs. selective motor control. The other domains of QOL, such as friend and family, health, and parents' health were not significantly associated with body or motor disorders. **Conclusion:** Selective motor control and muscle strength affected QOL by participation, assess to service, and pain/bother. The non-significant correlation between QOL and body mass index, contracture, and spasticity indicates that adolescents may cope with these disorders well in their daily life.

Abstract no.: 28464

CASE CONTROLLED STUDY IN THE USE OF AQUAMANTYS FIELD DIATHERMY COMPARED WITH CONVENTIONAL DIATHERMY IN TOTAL JOINT ARTHROPLASTY

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Aquamantys™ system is a radio-frequency bipolar field diathermy tool that is used to reduce primary blood loss intra-operatively, but operates at a lower temperature than conventional diathermy by being coupled to the saline irrigation. This reduces tissue damage giving a reduction in postoperative pain and swelling. In a case-controlled study, the outcomes of 25 patients admitted for elective total knee or hip arthroplasty in which Aquamantys™ was used, were contrasted with the outcomes of the last 25 patients admitted for the same elective surgery, operated on by the same consultant, using conventional diathermy (control) before the introduction of the Aquamantys™ system. Patients in both groups received the same postoperative care from the same staff. As measures of outcome in both groups, we considered the mean of haemoglobin drop between preoperative and postoperative levels, and the mean length of inpatient stay. In patients having total hip arthroplasty the mean length of inpatient hospital stay was 5.0 days when using Aquamantys, compared with 6.6 days in the conventional diathermy group ($p=0.072$). The average haemoglobin drop was 2.63g/dl in the Aquamantys group and 3.73g/dl in the conventional diathermy group ($p=0.058$). In total knee arthroplasty the mean length of inpatient hospital stay was 4.2 days if using Aquamantys, compared with 6.1 days in the conventional diathermy group ($p=0.001$). The average haemoglobin drop was 2.49g/dl in the Aquamantys group and 2.48g/dl in the conventional diathermy group ($p=0.976$). In summary, the use of Aquamantys reduced the length of stay in both hip and knee arthroplasty, and decreased the drop in haemoglobin in hip arthroplasty when compared to conventional diathermy. Furthermore, we clinically observed a reduction in postoperative pain in patients treated with Aquamantys.

Abstract no.: 28467

USE OF TRANEXAMIC ACID FOR CONTROL OF BLOOD LOSS IN BILATERAL TOTAL KNEE REPLACEMENT: AN INDIAN EXPERIENCE

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Background: Multiple studies suggest that tranexamic acid (TEA) reduces blood loss and red cell transfusions in patients undergoing unilateral total knee arthroplasty (TKA). However there is not much literature regarding use of TEA in patients undergoing concurrent bilateral TKA and the protocols for administration of TEA in such patients are ill defined. **Methods:** We carried out a case control study evaluating the effect of TEA on postoperative haemoglobin (Hb), total drain output and number of blood units transfused in 52 patients undergoing concurrent bilateral TKA and compared it with 56 matched controls who did not receive TEA. TEA was administered as two doses of 10mg/kg each (slow iv infusion), with first dose given just before tourniquet release of the first knee and the second dose 3 hours after the first one. **Results:** Our results showed a statistically significant reduction in total drain output and requirement of allogenic blood transfusion in cases who received TEA as compared to the controls. The postoperative Hb and Hb at the time of discharge was found to be lower in the control group and this result was found to be statistically significant. **Conclusion:** Our study showed that TEA administered in patients undergoing bilateral TKA in a single stage helps reduce total blood loss and decreases allogenic blood transfusion requirements. This might be particularly relevant in developing countries like India where facilities like autologous reinfusion might not be available.

Abstract no.: 28475

**EXTERNAL FIXATION IN TREATMENT OF DISTAL EXTRAARTICULAR
TIBIAL FRACTURES**

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The aim of this study is to evaluate the effectiveness of the external fixation in the treatment of distal extraarticular tibial fractures. 28 patients with equal number of fractures treated surgically with external fixation between 2003 and 2010 were reviewed. 18 patients were males and 10 females. Mean patient age was 38 years. According to A.O classification system we had 18 fractures of type A1, 7 fractures of type A2 and 3 fractures of A3 type. 19 fractures were closed, 3 closed with problems of soft tissues and 6 open. The cause was fall from height in 9 patients, car accident in 16 patients and ski sports in 3 patients. All fractures were treated with external fixation in combination or not with minimal internal fixation(screws or K-W). 26 fractures healed within 4.6 months on average. Follow up averaged 5.7 years(1-9 years). We observed 1 urinary infection, 1 pulmonary embolism, 10 pins infection, 1 skin necrosis, 1 nonunion, 1 malunion, 1 septic nonunion and restriction of ankle movements in one patient. 2 patients were reoperated successfully (1 with nonunion-IN, 1 with septic pseudarthrosis-Illizarov). The patient with malunion denied reoperation. We think that external fixation combined sometimes with mini internal fixation is an effective and reliable method for treatment of extrarticular distal tibial fractures.

Abstract no.: 28477

RESULTS OF TREATMENT OF KNEE DISLOCATION

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The aim of our work is to present our relatively limited experience from the treatment of 9 patients with knee dislocation, an extremely serious although, fortunately, rare injury. In the period of 1980-2005, 9 patients with knee dislocation were treated, 8 of whom were male and 1 female. The causes were: car accidents' in the case of 6 patients (one with multiple injuries), a fall in another patient and injuries during sports activities in another two patients. The age of the patients ranged between 18 and 47 years old, with an average of 31 years. Of the above, 8 dislocations were closed and one open with an accompanying fracture of the medial femoral condyle. No neuromuscular damage was identified in any patient. At the time of their hospital admission to the emergency room, 3 knee dislocations had been automatically reduced, 4 were reduced closed with gentle manipulation under general anesthesia, whereas the remaining two open, one due to a failed closed reduction attempt and the other because it was open. Following the reduction, all patients were subjected to a new neurovascular evaluation, radiological examination, as well as immobilization with brace to 8 patients and external fixation to the patient with open fracture. The knee instability treatment was effected immediately to 1 patient, in 3 weeks from the injury to 4 patients, within 2 months to 2 patients and within 5 months to 2 patients (multiple injuries, open dislocation). The outcome was judged as satisfactory in all 9 patients.

Abstract no.: 28478

THEURAPEUTIC APPROACH OF OPEN TALAR FRACTURES

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The purpose of this study is to present our experience of treatment of 4 open talar fractures. Between July 2006 and July 2010, 6 patients with equal number of open talar fractures were managed. All patients were males. The injury concerned the left foot in 3 patients whereas the right one in the remaining 3. The cause was road traffic accident in 2 patients and fall from a height in the other 4 patients. The injuries included 1 fracture of the lateral process with combined subtalar dislocation, 3 talar neck fractures of type II and 2 talar neck fractures of type III according to Hawkins classification. All patients were managed within 6 hours after injury with open reduction and internal fixation with K-wires or screws. During a mean follow up period of 3 years osteonecrosis with nonunion observed in 2 patients, subtalatr arthritis in 2 patients and skin necrosis in 1 patient. No other major complications were noted such as superficial or deep infection and malunion. We consider that early open reduction and mini internal fixation is recommended for open fractures of the talus.

Abstract no.: 28479

**TOTAL ARTHROPLASTY IN 1ST METATARSOPHALANGEAL JOINT
OSTEOARTHRITIS: REPORT ON 6 PATIENTS**

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The aim of this study is to estimate the use of total arthroplasty in the treatment of osteoarthritis of the first metatarsophalangeal joint. Between 2006-2010, six patients with equal number of first metatarsophalangeal joint osteoarthritis were treated. There was pain and oedema of the joint whereas the passive and active movements were painfull and restricted. The patients reported difficulty on walking especially on the ascending and descending stairs. Additionally three of them were complaining about wearing shoes with a heel. Radiographically there was narrowing of the articular space, subchondral cysts and osteophytes in 5 patients whereas in the other one only narrowing of the space. All patients were submitted in total arthroplasty of the joint with a titanium implant. An intraoperative fracture occured treated concervatively. At an averaged follow up of 4.5 years no magor complications were noted. There was a painless restriction of motion of the joint in one patient whereas another patient underwent a revision with a Keller arthroplasty 9 months postoperatively because of inability of wearing shoes with a heel with a satisfactory result. We think that total arthroplasty is a reliable method for the treatment of the first metatarsophalangeal joint osteoarthritis with satisfactory results especially in selected patients such as young and active old patients.

Abstract no.: 28481

WOUND HEALING PROBLEMS AFTER TOTAL KNEE ARTHROPLASTY

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After an implantation of total knee prosthesis, wound healing process is required for a good result. Although rare, wound healing issues might lead to severe consequences. A compromised immune system, rheumatoid arthritis, peripheral venous conditions, the scars of previous operations, diabetes, anemia, as well as smoking, are constitutional and co-morbidity risk factors. A choice of surgical approach, lateral release, tourniquet use, and operation length represent some of the most important intra-operative risk factors. From January 2006 to December 2010, 186 patients, who had 3 or more predisposing factors, were followed up. There were 4 cases of wound complications (2.15%). All 4 patients were female, older than 65 years, obese. The same surgical approach was done to all patients. Varus deformity was corrected in 3 cases and two patients had lateral release. Poor wound healing, complicated by surface infections, was noted in three cases. By applying debridement and due to adequate use of antibiotics and secondary wound closure, all of these wounds were healed. The skin necrosis of patella was observed, as well as joint exposition and deep sepsis in the fourth case. This required multidisciplinary approach. Fasciocutaneous flap was done locally to cover this skin defect. Wound healing problems, after total knee arthroplasty, are not very common and can be easily solved by applying simple surgical principles. In some cases, an issue can be a starting point for the series of local and system disorders with fatal result unless intensive treatment and adequate surgical measures have been applied.

Abstract no.: 28483

EVALUATION OF THE FEMUR SHAFT STRENGTH AFTER SECTORAL RESECTION

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Sectoral resection is the main type of surgical treatment of benign tumors and tumorlike bone lesions. The adequate compensation for the loss of strength of affected bone after resection is very important, especially in lower limb – the unjustified refusal of preventive osteosynthesis can lead to iatrogenic pathological fracture, and ungrounded realization of it requires the subsequent additional unwarranted surgical procedure – removing of the fixation device. As a result, at all of these cases, the time of treatment is growing unnecessarily and the extent of possible recovery of affected limb function is falling (resistant atrophy of muscles and post-immobilization contractures of joints). A comparative calculation of strength of the intact bone and the bone after sectoral resection (represented as a pipe) can be executed on the basis of classical theories of solid body mechanics. Distribution of loads on the mathematical model of the femur shaft was studied using a computer program ANSYS ® 11.0. We also carried out a retrospective analysis of surgical technique (localization, linear and angular dimensions of post-resection bone defect), postoperative management and complications in 34 children and adolescents with tumors and tumorlike lesions of the femur, which were under the supervision of our hospital from 2001 to 2008. Comparative analysis of the mathematical and clinical data provided to objectify the indications for different methods of compensation of the loss of the femur shaft strength after sectoral resection (the limitation of extremity loading, casting and preventive osteosynthesis), depending on the location and size of the post-resection bone defect.

Abstract no.: 28485

CLINICAL AND RADIOGRAPHIC RESULTS OF 200 THA'S USING THE MODULAR METHA® SHORT STEM – 5-YEAR FOLLOW-UP

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Background: More and more young patients undergo total hip arthroplasty (THA). As a matter of course the bone preserving use of short stems in primary THA is high demanding during surgery as well as during critical follow up. **Material and Methods:** Two hundred primary THA's using the METHA® short stem had been performed using the conventional posterior approach as well as the less invasive anterior approach. 30 % of the THA's had been navigated using the ORTHOPILOT® system. Clinical (HHS) and radiological data (metha questionnaire) had been collected before and after surgery. The follow up window was extremely narrow (4, 6, 12, 24, 36 and 60 months) to detect possible changes in the structure of metaphyseal bone. **Results:** HHS increased from preoperatively 53 to 94 (4 months) and 96 (12 months), remained excellent average 97 after 24, 36 and 60 months. All stems showed full integration after 4 months. Within the first 4 months 5 revisions had to be done due to subsidence of the stem (2) and dislocation of the hip (3). The revision rate due to fracture of the modular neck was 3 %. 2 Revisions could have been done using the METHA® short stem due of excellent bone stock. **Conclusion:** The METHA® short stem is an excellent alternative in primary THA, especially in the young and demanding patient. Modularity of the neck allows anatomical reconstruction of the leg length as well as lateral offset. Arthroplasty could be done safe, quick and with a minimal rate of intra- and postoperative complications. Unfortunately, fractures of the neck due to failure of the material resulted in a high revision rate.

Abstract no.: 28499

CHRONIC EXERTIONAL COMPARTMENT SYNDROME: DIAGNOSIS BY DYNAMICAL DOPPLER ULTRASONOGRAPHY

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Background: Chronic exertional compartment syndrome (CECS) is most often seen in young and physically active people with the complaint of pain during exercise that usually subsides at rest. Several authors have demonstrated abnormally reduced muscle blood flow during exercise in CECS patients. The purpose of the current study is to evaluate the venous flow patterns of the leg in order to diagnose CECS by dynamical Doppler ultrasonography. **Patients and methods:** We studied twenty five consecutive patients with a history of exercise-induced pain and suspicion of chronic exertional compartment syndrome of the lower leg and 25 age-matched control subjects. We analyzed pre- and post-exercise venous flow of the leg. **Results:** In the control group, the expected reaction to the exercise is the change of doppler spectrum from triphasic to biphasic flow, Where as in CECS group, the doppler spectrum tends to stay triphasic. **Conclusion:** In chronic exertional compartment syndrome, the increased pressure of the compartments disturbs the regulatory mechanism and triggers vasodilatation; which leads post-exercise triphasic flow due to increased resistance. Based on our results, Dynamic Doppler Ultrasonography is a useful, noninvasive method to diagnose chronic exertional compartment syndrome that can affect the choice of treatment.

Abstract no.: 28503

TRIPLE PELVIC OSTEOTOMY EFFECT ON HEAD-NECK QUOTIENT IN SEVERE CASES AT PERTHES DISEASE

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To estimate the change of femur's proximal part form in severe cases at Perthes disease we paid attention to the head-neck quotient (HNQ), which vividly shows degree of shortening and widening of femur neck of the affected joint in comparison with a healthy one. The triple pelvic osteotomy's (TPO) effect on HNQ was studied (23 patients, "operated patients group"); the operations were held at an early stage. The data was compared to Group-II (20 people, "control group"), with unfavorable signs of disease and who were not involved in operative measures by different reasons. These groups are statistically comparable by key indicators. In both groups average value HNQ was less than 100%. At the beginning of the treatment this value was less in Group-I, than in Group-II (Mann-Whitney U test $p=0,005$) and was $72,6\pm9,9\%$. After the operation its size has gradually increased and in three years was $83\pm12,24\%$. In group-II there was a reduction of average value of the indicator from $84\pm13,13\%$ to $73,8\pm10,55\%$. Finally the size HNQ is less at conservative treatment (Mann-Whitney U test $p=0,03$). TPO at unfavorable course Perthes disease makes a positive effect on remodeling processes, and finally on the femur's proximal part form. Improvement of HNQ is the evidence.

Abstract no.: 28509

**COMPARATIVE RESULTS OF TREATMENT IN SEVERE CASES AT
PERTHES DISEASE BY CONSERVATIVE WAY AND BY TRIPLE PELVIC
OSTEOTOMY**

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To compare the results of treatment of patients with Perthes disease we used Stulberg classification. This classification allows evaluating the femur's head form and the acetabulum form. The triple pelvic osteotomy's (TPO) effect on femur's head form and the acetabulum form was studied (23 patients, "operated patients group"); the operations were held at an early stage. The data was compared to Group-II (20 people, "control group"), with unfavorable signs of disease and who were not involved in operative measures by different reasons. These groups are statistically comparable by key indicators. According to Stulberg classification the disease outcomes after TPO have appeared much better, than at conservative treatment. The majority of joints in Group-I (74 %) (Fisher's exact test $p=0,0005$) correspond to I and II classes while in Group-II there were only 20 % of such classes. In Group-I there were 6 patients (26 %) with the result «aspherical congruency», while in Group-II there were 13 of such joints (65 %), which is more than in Group-I (Fisher's exact test $p=0,0116$). There were no expressed deformations with «aspherical incongruency» in Group-I, while in Group-II there were in 3cases (15 %). TPO makes a positive form-building impact on femur's proximal part.

Abstract no.: 28510

OUTCOME OF LIMB LENGTHENING IN FIBULAR HEMIMELIA AND A FUNCTIONAL FOOT

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Background: The decision to recommend either reconstructive or ablative surgery to the parents of children with fibular hemimelia is difficult and debatable in the orthopaedic literature. **Methods:** This is a retrospective study reporting our experience of the treatment of eight children (eight limbs) with fibular hemimelia with limb lengthening using Ilizarov or Taylor spatial frames. All of these children had type 1 or 2a fibular hemimelia (Achtermann and Kalamchi). We used the number of rays present in the foot as a guide to decide on the treatment option. Children with more than three rays at the time of presentation were considered for limb reconstruction using Taylor spatial or Ilizarov frames. **Results:** All patients were ambulatory and mobile with acceptable leg lengths and limb alignment at the time of last follow-up. All of them were satisfied with the outcome. Knee stiffness was a significant problem in the majority of the patients following lengthening. **Conclusions:** We conclude that limb reconstruction in children with less severe forms of fibular hemimelia is a good option.

Abstract no.: 28511

**METASTATIC CARCINOMA WITH UNKNOWN PRIMARY
MASQUERADING AS PELVIC INFECTION: A CASE REPORT AND
REVIEW OF LITERATURE**

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We present a case of an eighty year old gentleman who presented with unremitting hip pain and pyrexia. He had raised C-reactive protein level as well as neutrophilia. He was unable to weight bear but had minimal restriction of passive joint movement. His hip radiographs showed some early osteoarthritis which was fairly symmetrical in both hips. The MRI scan of the hip showed high signal lesion in the acetabulum with a psoas effusion and some hip joint effusion. This was reported as infectious pathology but patient showed no improvement with antibiotics. Finally the diagnosis was made after a core biopsy which proved to be a metastatic epithelial carcinoma of unknown origin. The patient was investigated for upper gastrointestinal malignancy without any positive results. Patient finally received radiotherapy for his metastasis which controlled his symptoms. Conclusion: A diagnosis of malignancy, primary or metastatic, should always be a differential when dealing with elderly patients. We discuss here the further details of the case with review of available literature.

Abstract no.: 28512

PSEUDO ANEURYSM OF THE LATERAL CIRCUMFLEX FEMORAL ARTERY PRESENTING AS ANTERIOR THIGH COMPARTMENT SYNDROME AFTER FIXATION FOR NECK OF FEMUR FRACTURE. AN UNUSUAL VASCULAR COMPLICATION

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Traumatic pseudo aneurysms are rarely encountered in orthopaedics. It is an unusual complication which can have devastating consequences. Recognition of this problem can help in early diagnosis and prevent a catastrophe. Most aneurysms are caused due to direct injury from the displaced fracture fragments. We report a case of a 70 year old lady who presented with an undisplaced fracture of the neck of femur who underwent fixation with AO canulated cancellous screws on the next day. She was discharged from the hospital in five days after satisfactory progress. She presented within 3 days of discharge with a sudden onset acute pain in the anterior thigh with symptoms of anaemia. She clinically had a compartment syndrome of the anterior thigh and a CT angiogram showed a pseudo aneurysm of the lateral circumflex artery which had ruptured and bled into the anterior compartment. The patient was successfully resuscitated and the compartment was released. The aneurysm was ligated to control bleeding. Conclusion: We suspect the aneurysm developed as a result of a probable iatrogenic injury from the guide wire insertion and we have not found a complication like this to have happened during canulated screw fixation. As this surgery is one of the most common surgery performed in orthopaedics we recommend optimal care and before passing a guide wire to prevent such a consequence.

Abstract no.: 28514

**PRIMARY SYNOVIAL OSTEOCHONDROMATOSIS OF THE SHOULDER
WITH EXTENSION INTO BICIPITAL GROOVE: ARTHROSCOPIC
TREATMENT OF A CASE AND REVIEW OF LITERATURE**

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Abstract: Synovial osteochondromatosis is a rare joint pathology. Affection of the shoulder is even more uncommon. We present a 25 year old lady who presented with shoulder pain. Her radiographs revealed extensive loose bodies in the shoulder as well as the around the biceps tendon. We treated her with arthroscopic debridement and synovectomy. This did improve her symptoms but she continued to have some shoulder pain which we attributed to early degenerative changes already visible on arthroscopy, probably due to third body wear. Conclusion: We have discussed this case with a literature review and it is our attempt to share this rare pathology and its treatment options with a wider audience.

Abstract no.: 28515

DELAYED FAILURE OF THE ANKLE SYNDESOMOSIS DESPITE ADEQUATE SYNDESMOTIC STABILIZATION: A CASE SERIES OF 3 PATIENTS AND REVIEW OF LITERATURE

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Ankle fracture is one of the most common orthopaedic injuries. The treatment is fairly standardised and most fractures, if treated well, will yield good results. But this is by no way a rule and we present our share of exceptions. We present our case series of three patients who sustained a ankle fracture with disruption of the tibiofibular syndesmosis and were treated with open reduction and internal fixation as well as syndesmotic stabilization. All had a same post operative protocol. All these patients presented with very late opening of the syndesmosis which was identified at an average of 15.33 weeks from fixation. In retrospect no obvious cause for this failure could be identified. A new method of treatment involving fixation of the syndesmosis with 2 to 3 quadri-cortical 4.5mm cortical screws was employed. All patients at an average 4 month follow up showed good progress both radiologically and clinically scoring average of 67.66 on the aaos foot and ankle scor. We have taken this opportunity to discuss these uncommon modes of failure in ankle fixations and identify the reasons by a literature review.

Abstract no.: 28522

OPERATIVE TREATMENT OF CONGENITAL HALLUX VARUS

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Background: In this study, we reported outcomes after surgical treatment of ten feet of eight patients with a congenital hallux varus deformity, including four feet combined with a longitudinal epiphyseal bracket (LEB). **Methods:** Seven male patients and one female patient with a mean age at the time of surgery of 33 months (range, 7-130 months) were evaluated in this study. Two patients showed bilateral involvement. Mean duration of the follow-up was 5.9 years (range, 1.1-13.8 years). Pain, difficulty in wearing shoes, calluses, residual deformity, and patient's satisfaction were evaluated with medical records, simple radiographs, clinical photographs, and telephone surveys. Clinical outcomes were assessed according to the criteria of Phelps and Grogan. **Results:** Surgical procedures varied according to the severity of the deformity and the anatomic configuration of the first metatarsal or proximal phalanx. They included the Farmer procedure, the McElvenny procedure, or osteotomy at the first metatarsal or proximal phalanx. The clinical results were excellent in two feet, good in six, and poor in two. The varus deformity was corrected significantly in all patients. An LEB was associated with hallux varus in four feet, which were treated by osteotomy alone or in conjunction with soft tissue procedure. **Conclusions:** Congenital hallux varus was sufficiently corrected by surgery and showed overall favorable results. Metatarsal osteotomy in conjunction with a soft tissue procedure was useful in some cases. Preoperatively, an LEB should be considered as a possible cause of the deformity in order to prevent recurrent or residual varus after surgery.

Abstract no.: 28525

SHOULDER AXILLARY VIEW RADIOGRAPH AN EFFECTIVE AND EASILY ACCESSIBLE BUT UNDERUTILIZED MODALITY FOR THE DIAGNOSIS TYPE IV ACROMIO-CLAVICULAR JOINT INJURY, IN EMERGENCY DEPARTMENTS OF UK

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Background: ACJ separation injuries are around 9% of all Shoulder Girdle Injury. In professional rugby union in England, 32% the shoulder injuries are acromioclavicular joint injuries (1). Usually affecting young athletic male (2) in their 20s-30s. Type IV to VI ACJ injuries almost always require surgical reconstruction of ACJ (2,3,4,5,6). In, rare (3), type IV ACJ injuries acromioclavicular and coracoclavicular ligaments disruption, clavicle displaces posteriorly into or through the trapezius. Plain Radiograph is the most accessible, fastest and economical modality to diagnose and differentiate ACJ injury in the emergency department. Among different views of radiographs Shoulder Axillary view x-ray(3,6,7,9) is the most accurate view to differentiate Type IV ACJ injury from other types.

Objective: To review the current practice of performing Axillary view Shoulder radiograph, with a view to specifically differentiate Type IV ACJ injury from others types, in the Emergency Departments of UK. **Method:** Telephonic interview with on call Radiographer, in the Emergency department, of 18 University Hospitals across the country. **Results:** Out of 18 Emergency departments only 2 departments routinely perform or attempt Shoulder Axillary View X-ray, in suspected ACJ injuries. 16 hospitals had no formal protocol to perform Axillary view X-ray specifically to diagnose and differentiate different type of ACJ injuries. **Conclusion:** Result suggests that Shoulder Axillary view x-ray is not widely used in differentiating the Type IV injury from other ACJ injuries. This leads to unnecessary delay in diagnosis and definitive surgical management of the pathology. This is particularly important in view of that early reconstruction of ACJ in Type IV-VI injuries avoids inferior clinical results of delayed reconstruction.

Abstract no.: 28526

COMPARISON OF RADIATION EXPOSURE WHEN USING 3D C-ARM IMAGING AMONG HIP, KNEE AND ANKLE: AN EXPERIMENTAL STUDY

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Introduction: Nowadays, role of intraoperative imaging is increasing in many fields of orthopaedic surgery. Many studies have been investigated the radiation hazard in different kinds of fluoroscopy, however, such information of 3D fluoroscopy is still limited. We, therefore, conducted this experimental study in order to evaluate the radiation exposure while using a 3D-fluoroscope at the hip, knee and ankle. **Materials and Methods:** A human cadaveric body was selected as a target of interest. An isocentric C-arm fluoroscope was used to perform scanning in both of low and high resolution at the right hip, knee and ankle 3 times each in order to simulate intraoperative application. Radiation exposure was measured by using the digital placed on top of the target of interest and another four directions (proximal, distal, medial and lateral) in every 25cm increment from the focus until the radiation cannot be detected. **Results:** In low resolution scan, mean radiation doses at the focus of the hip, knee and ankle are 25.67 ± 2.08 , 20.1 ± 1.00 and 2 ± 0.00 μSv respectively various in high resolution which are 49.67 ± 3.79 , 44 ± 5.57 and 19.67 ± 7.37 μSv . Radiation dose and distance of exposure of the hip scan is higher and longer than those of the knee and the ankle. No radiation can be detected after 1.75 meters away from the focus. **Conclusion:** Radiation exposure while using a 3-D fluoroscope depends on many factors. Radiation dose reduces with increasing distance away from the focus. More exposure can be detected with high resolution scan, bigger target of interest and location in the opposite site of the fluoroscope machine. More than 1.75 meters from the focus is safe from the radiation.

Abstract no.: 28528

POSTOPERATIVE BLOOD LOSS REDUCTION IN CONVENTIONAL TOTAL KNEE REPLACEMENT BY INTRA-ARTICULAR TRANEXAMIC ACID INJECTION TOGETHER WITH 2-HOUR CLAMP DRAIN: A PROSPECTIVE TRIPLE-BLINDED RANDOMIZED CONTROLLED TRIAL

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A prospective triple-blinded randomized study was conducted to evaluate the effect of intra-articular tranexamic acid (TXA) injection compared with intra-articular saline injection together with 2-hour clamp drain in 135 patients who underwent conventional total knee replacement (conventional-TKR). Patients were assigned, by computer-generated blocked randomization, to receive either of a mixed intra-articular solution of TXA 500 mg and physiologic saline (TXA-500 group) or TXA 250 mg and physiologic saline (TXA-250 group), or physiologic saline (control group) followed by clamp drain for 2 hours. The mean drainage volume in TXA-500 and TXA-250 group was 431.6 and 456.1 ml ($p = 0.02, 0.08$ respectively) compared to 552.7 ml in control group. The mean hemoglobin loss in those was 2.1 and 2.1 g/dl ($p < 0.0001$ both) compared to 3.1 g/dl in control group. The mean calculated total blood loss in those was 215.2 and 232.1 ml ($p < 0.0001$ both) compared to 331.6 ml in control group. Allogenic blood transfusion was needed in none (0%), five (11%) and nine (20%) patients in TXA-500, TXA-250 and control group respectively. Postoperative knee scores were not significantly different between groups. Regarding to complication outcomes of TXA-500, TXA-250 and control group; deep vein thrombosis was found in two (4.4%), one (2.2%) and three (6.7%) patients respectively. Pulmonary embolism was found in one patient in control group. Congestive heart failure was found in one patient in TXA-250 group. Intra-articular 500-mg TXA injection with 2-hour clamp drain was effective for reducing blood loss and blood transfusion in conventional-TKR.

Abstract no.: 28529

SUCCESSFUL TREATMENT OF MENISCAL OSSICLES: TWO CASE REPORTS AND 1-YEAR FOLLOW-UP

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Meniscal ossicle is a cancellous bony structure covered by meniscal cartilage and is reported as a rare finding in human knee. It can cause joint line tenderness or mechanical symptoms such as locking, catching, giving way and even meniscal tear, in extreme cases. We present two cases of ossicles within the meniscus of the human knee, of which the latter is accompanied by root tear in its attachment. We treated the former case with subtotal meniscectomy and the latter with pull-out suture following excision of the ossicle, respectively. The two treatments were successful without complications after 1 year follow-up.

Abstract no.: 28530

BTB ACL RECONSTRUCTION

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Reconstruction of ACL is now one of the most widespread interventions in traumatology and orthopedics. The purpose of the present research was the estimation of results of BTB ACL reconstruction. Material and methods: Since January 2008 till January, 2010 we treat 72 patients with ACL rupture, for reconstruction we used BTB autograft, also we used two biodegradable pins (RigidFix, Ethicon, Mitek Division) crossing the bone perpendicular to the bone tunnel. Middle age of patients has made 28,7 years. Average duration of the period after a trauma before intervention has made 3,7 months. In our research following intraarticular manipulations were carried out: resection of meniscus – 24 cases (33 %), repair of meniscus– 12 cases (16,7 %), OATS – 1 case (1,3 %). Fracture of patellae is fixed in one case (1,3 %). In 6 months after operation three patients (4,1 %) had flexion contracture with deficiency of extension 5°, 21 patients (29,2 %) had deficiency of bending. The estimation of results of treatment was conducted on a scale of Lisholma. Average value before operation has made $61,52 \pm 4,32$. In 6 months after operation value has grown to $89,32 \pm 5,02$. In one case after a repeated trauma there has come the rupture of the transplant which has demanded revision arthroscopic plastic of ACL (1,3 %), in 9 cases (12,5 %) function of a knee joint after operation is estimated as good, in other cases – very good.

Abstract no.: 28531

EFFECTIVENESS OF USING THE SPIKED SHELL IN TOTAL HIP REPLACEMENT THROUGH A SHORT INCISION FOR SECONDARY OSTEOARTHRITIS UNDER THE AGE OF 50 YEARS

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In secondary osteoarthritis due to acetabular dysplasia, total hip replacement (THR) is difficult because of morphological abnormality in the acetabulum. Here we report the mid-term results achieved using the spiked shell for these cases. Since 2001 we have used the spiked shell (Trilogy, Zimmer Co.) for 66 THR in patients under the age of 50 years. Patients included 7 males and 59 females. Their mean age at operation was 46.3 years (26- 50). The anatomical abnormality of the hip center according to Crowe's classification was type I in 42 hips, type II in 13 hips, and type III in the other 11 hips. All operations were performed by the same surgeon through a short skin incision and a modified direct lateral approach. The mean follow-up period to date is 4.2 years (3 months to 8.8 years). Results were good in all cases, and no revision surgery was necessary. Complications occurred in only two cases; one involving postoperative dislocation, and the other involving deep vein thrombosis. In acetabular dysplasia, there usually is significant bone defect in the roof of the acetabulum, while bone is abundant in the infero-medial part of the acetabulum. The spiked shell is initially fixed exactly by three spikes; no additional screw fixation is needed and solid fixation follows later through bone ingrowth into the metal mesh of the shell, even in cases with moderate bone defect in the acetabular roof. We concluded that using the spiked shell was effective in THR in the dysplastic hip.

Abstract no.: 28532

FK506 INHIBITION OF GLIOSTATIN/THYMIDINE PHOSPHORYLASE PRODUCTION IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Gliostatin (GLS) is known to have angiogenic and arthritogenic activities. We previously demonstrated significantly higher concentrations of GLS in the sera and synovial fluids of rheumatoid arthritis (RA) patients compared to those with osteoarthritis or normal controls. The production of GLS in cultured fibroblast-like synoviocytes (FLSs) was enhanced by IL-1 β , TNF- α and GLS itself. FK506 (tacrolimus), an orally available macrolide calcineurin inhibitor, is a potent immunosuppressant widely used to prevent graft rejection after organ transplantation and atopic dermatitis. The efficacy of FK506 monotherapy in the treatment of RA and in combination with methotrexate has been previously described. The purpose of this study was to determine the inhibitory effects of FK506 on GLS production in RA. We investigated the modulation of serum GLS by FK506 therapy and the effect of FK506 on the production of GLS in FLSs. Serum samples were collected from 11 RA patients after 12 weeks of FK506 treatment. Serum concentrations of GLS and matrix metalloproteinase (MMP)-3 were measured by ELISA and found to be down-regulated in responders evaluated with a disease activity score. FLSs from RA patients were cultured and stimulated by TNF- α with or without FK506. The expression levels of GLS were determined using reverse transcription-polymerase chain reaction and enzyme immunoassay and shown to be significantly increased. GLS levels in TNF- α -stimulated FLSs were reduced by FK506 treatment. Our data show a novel mechanism for the action of physiological concentrations of FK506 in RA that regulates the production of GLS in FLSs.

Abstract no.: 28542

**THE MID-TERM RESULTS OF FEMORAL IMPACTION BONE GRAFTING
WITH ALLOGRAFT COMBINED WITH HYDROXYAPATITE**

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The purpose of this study is to evaluate the clinical and radiographic outcome of the mid-term results of femoral impaction bone grafting with allograft combined with hydroxyapatite. Patients & Methods: Fifty-three consecutive femoral reconstructions (52 patients) that were performed between December 1997 and May 2007 with use of frozen morselized allograft, hydroxyapatite, and cemented CPT stem were followed retrospectively. The average age of the patients at the time of revision hip arthroplasty was 70 years. The average postoperative period is 68 months (from 12 to 123 months). Femoral bone defects were classified with use the system of Endoklinik, as grade 1 in 3 hips, grade 2 in 22 hips, grade 3 in 27 hips, and grade 4 in 1 hip. A femoral head was used as allograft and 10g hydroxyapatite was mixed with allograft. The system of Merle d'Aubigne and Postel was used for clinical evaluation. Stem subsidence, cortical repair of the grafted bone was assessed on radiographs. Results: The mean clinical score was improved from 8 points preoperatively to 13 points at the follow-up. Stem subsidence was seen in 25 hips (range 1 to 5 mm), however it was not progressive after 1 year postoperatively except 1 hip. Cortical repair was detected at the average of 7 months postoperatively. The failure including stem loosening or infection was not observed. Internal fixations were performed for intraoperative fracture in 6 hips and postoperative in 4 hips. Conclusions: Impaction bone grafting with allograft combined with hydroxyapatite was achieved good result.

Abstract no.: 28545

CHANGING LOWER LIMB SHAPE USING ORIGINAL ASSEMBLIES OF EXTERNAL FIXATION DEVICES ON THE BASE OF ILIZAROV HINGES AND NAVIGATION ASSISTED ORTHO-SUV FRAME

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Aim: The aim of investigation was developing new effective assemblies of external fixation devices for esthetic adjusting of lower limb's shape. The assemblies should be satisfied the requirements: possibility of valgization, medialization, rotation of distal bone fragment, sufficient rigidity of bone fragments fixation for weight bearing, opportunity of bringing together both legs till the full contact in early postoperative period. **Methods:** The assemblies' fixation and reduction properties of assemblies were investigated using bench tests (40 series of experiments). Developed assemblies were used in esthetic change of lower limb's shape in 38 patients. Using module transformation (removing of internal half-rings) allows to bring the legs together in ExFix devices in early postoperative period for estimating the result and, if necessary, to perform additional correction. Corrections were performed by Ilizarov hinges or using software-based Ortho-SUV Frame (<http://www.rniito.org/download/ortho-suv-frame-eng.pdf>). For reaching desired shape legs valgization, medialization, rotation of distal tibial bone fragment were performed. **Results:** 33 operated patients were satisfied with the achieved lower limb's shape. Secondary deformation after external fixation device removing was happened in one case. The pin-tract infection was developed in three cases. **Conclusion:** If for esthetic change of lower limb's shape valgization or medialization of distal bone fragment must be performed, Ilizarov hinges can be used. Software-based Ortho-SUV Frame is notably effective when correction includes the rotation and when multiplane correction should be done.

Abstract no.: 28548

CLINICAL EFFICACY AND COST-EFFECTIVENESS OF INTRA-OPERATIVE CELL SALVAGE IN PELVIC TRAUMA SURGERY

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We assessed the clinical efficacy of using intra-operative cell-saver in terms of amount of blood salvaged and the requirement of post-operative transfusion and its cost-effectiveness in patients undergoing major pelvic trauma surgery in our institution. 30 patients (25 males and 5 females) with a mean age of 41 years (Range 31-79 years) were assessed. Mean pre-operative hemoglobin was 11.7 (Range 8.5-15.0, Std Dev 1.84) and post-operative haemoglobin was 9.8 (Range 6.5-12.5, Std Dev 1.45), mean intra-operative blood loss was 1322 ml (402-2693 ml, Std Dev 771.97). 13 patients (43%) required post-operative blood transfusion and a total of 24 units were transfused, majority (8 patients) requiring only 2 units. Based on the expected post-operative hemoglobin values and current hospital transfusion policies an estimated 56 units of blood would have been required post-operatively, however only 24 units were transfused. Thus a total of 32 possible transfusions in 30 patients were avoided and roughly 2306£ (77£ per patient) were saved using intra-operative cell-saver. Our study clearly shows that using intra-operative cell salvage in pelvis trauma surgery significantly reduces the requirement of post-operative transfusion and is cost-effective.

Abstract no.: 28555

SURGICAL PROCEDURE “IN SITU PREPARATION” FOR SARCOMA OF LIMB IN CLOSE PROXIMITY TO MAJOR NEUROVASCULAR STRUCTURES

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Background: When soft-tissue sarcoma is excised, the surgical margin according to the histological grading is important. When soft-tissue sarcomas occur near neurovascular structures, only preoperative images cannot always reveal the accurate relationship between the tumor and these structures. Previously, the surgical method, namely “In Situ Preparation”, was introduced in 2002. This method enables the preparation of neurovascular bundles and the intraoperative evaluation of the surgical margin without contamination by tumor cells and then additional procedures, including alcohol soaking, and distilled water soaking of the preserved neurovascular bundle can also be performed to preserve the continuity of vessels. **Method:** Between January 2006 and October 2009, ISP was applied to 8 patients (5 women and 3 men) with soft tissue sarcomas of limbs in close proximity to major neurovascular structures. The average age is 60.5 years old (from 35 to 78 years old) and average follow up period is 319 days. The pathological diagnosis confirmed myxoid liposarcoma in 2, pleomorphic liposarcoma in 4, myxoinflammatory fibroblastic sarcoma in 1, and phosphaturic mesenchymal tumor in 1. The tumors occurred in thigh in 5, lower extremities in 1, and forearms in 2. **Result:** Complete local controls were achieved in all patients at last follow-up. Oncological outcomes were DOD in 5 patients and CDF in 3. No complications, including nerve palsy, embolism, and infection were observed. **Conclusion:** ISP enabled intraoperative evaluation of the surgical margin without contamination, and preserved limb functions without unnecessary sacrifice.

Abstract no.: 28559

LOCKING PLATE FIXATION FOR THE TREATMENT OF TIBIAL PLATEAU FRACTURES

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Purpose: Locking plate is being widely used for tibial plateau fractures and many good clinical results are reported, but the problem exists in recent years, too. Treatment results of locking plate to this fracture in our hospital were examined including NCB-PT that was poly axial locking plate that had become possible to use recently. Object and method: Objects are 29 cases of tibial plateau fracture treated by using locking plate. The age was 61.3 years old at the injury of 14 men and 15 women. The fracture type was AO classification B1:4 cases, B2:2 cases, B3:9 cases, C1:5 cases, C2:2 cases, and was C3:7 cases, and Locking plate used was LCP-PTP:10 cases, LCP-L buttress plate:5 cases, LCP-PLT:4 cases, and NCB-PT:5 cases, etc. The follow-up phase was 9.6 months after the surgery. X-ray evaluation and the clinical validation of these cases were performed. Result: In X-ray evaluation at final investigation, FTA was 175.3°, and vertical subsidence of articular surface was 0.18mm, and widening of tibial plateau was 0.24mm. As the functional evaluation by the criterion of Hohl & Luck, 22 cases were excellent, 6 cases good, and 1 case fair. As postoperative complication, two cases carried out delayed infection those were cured by implant removal. Consideration: NCB-PT, that is poly-axial locking plate, is able to acquire interfragmental compression at joint surface and to be used as buttress plate because of its shape. NCB-PT acts as bridging plate to the metaphyseal comminuted fracture, as buttress plate to the condylar split fracture, and as raft plate to the depressed fracture, so it is useful implant for tibial plateau fractures.

Abstract no.: 28561

COMPLICATIONS OF MIPPO IN TIBIA FRACTURES

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Minimally invasive percutaneous plate osteosynthesis is gaining popularity in the treatment of lower leg fractures due to its biological and biomechanical advantages over other methods in certain (eg. periarticular) fractures. Nevertheless the procedure is more complex and demands more skills for intraoperative reduction control. Aim of study was to reveal complications related to this technique Materials: 65 patients with lower leg fractures treated using MIPPO technique in 2004-2010 with minimum follow-up 6 months were included in study. There were 9 open fractures, 3 closed with significant soft-tissue injuries. Peri/intraarticular fractures of proximal tibia - 11 cases, distal - 48 cases, shaft fractures - 6. Results: Most fractures healed uneventfully, full weight-bearing begun after 15.7 ± 4.6 weeks. Different complications occurred in 11 cases (16.9%), and were divided into three groups: malreduction, consolidation complication, soft-tissue problems. Malalignment (5 cases, 7.7%) was related to later terms of surgery, all these patients were operated later than 2 weeks after the injury. Non-union (4; 6.2%) and delayed union (3; 4.6%) were seen after tibia fractures with open (Gustilo IIIA - 3 cases) and closed (Tscherne Gr. III - 2 cases) soft-tissue injuries. In 2 cases consolidation complications developed in the complete absence of weight-bearing despite surgeon recommendations. Conversion osteosynthesis was performed in 3, bone grafting in 2 cases. No deep infection occurred. In 2 cases delayed scar breakdown after placement of bulky broad stainless steel LC-DCP on medial tibia surface was seen (2 from 6 broad plates on medial surface). Discussion: MIPPO represents a growing alternative to ORIF with plate as it provides minimal soft-tissue complications. Major difficulty is achievement of fracture reduction with proper alignment, what can be difficult in later treatment. Consolidation problems seen in our group can be related to severity of initial trauma.

Abstract no.: 28562

STRUCTURAL AND FUNCTIONAL OUTCOME ANALYSIS OF TRIPLE VERSUS CHIARI PELVIC OSTEOTOMY IN THE TREATMENT OF LEGG-CALVE-PERTHES DISEASE

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We analyze the treatment results of Legg-Calve-Perthes disease in thirty patients treated by triple pelvic osteotomy, and thirty-six patients treated by Chiari pelvic osteotomy. Besides Herring classification system, both structural (CE angle, femoral head containment) and functional results (limb length discrepancy, range of motion, gait quality) were assessed. Both groups had same postoperative care and rehabilitation method. We found that Chiari osteotomy showed greater improvement of both CE angle (22,5 degrees compared to 15,4 degrees, p<0,01) and femoral head coverage (13% compared to 11%, p<0,05). Triple pelvic osteotomy was found to give better range of motion postoperatively (3% of flexion loss, compared to 16%, p<0,01), except in adduction, which is expected regarding the surgical approach. We recommend triple pelvic osteotomy as preferable to Chiary osteotomy in the treatment of LCP disease in older children and adolescents, except in Herring C group.

Abstract no.: 28566

**TREATMENT OF THE FEMORAL TROCHANTERIC FRACTURE USING
INTERTROCHANTERIC ANTEGRADE NAIL**

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OBJECTIVE: The aim of this study is to compare the postoperative sliding of the lag screw and clinical complications between new intertrochanteric antegrade nail (InterTAN; Smith-Nephew, Memphis, TN) and conventional Gamma nail 3(GN-3; Stryker, Mahwah, New Jersey). **METHODS:** The design of this study is retrospective. From April 2008 to November 2010, 98 trochanteric femoral trochanteric fractures were operated using by two different instruments. Fifty-six patients were treated with InterTAN and 42 patients with GN-3. **RESULTS:** There were no differences in the incidence of gender, the mean age, the complexity of the fractures (OTA/AO classification), blood loss, operative time between both groups. The average sliding of the lag screw with InterTAN was significant less than that of GN-3 postoperatively (InterTAN: 1.19 mm /GN-3: 4.24 mm, P=0.0005). We had two postoperative complications in each group, one case was settled into varus malalignment in InterTAN group, one case in GN-3 group was femoral shaft fracture postoperatively. **CONCLUSION:** This study showed that the average postoperative sliding of the lag screw with InterTAN was smaller than that with GN-3. Therefore the smaller sliding could be better primary fixation of fracture site. InterTAN is one of the most useful devices to decrease sliding of lag screw postoperatively and to get primary fixation of the femoral trochanteric fracture.

Abstract no.: 28567

A RETROSPECTIVE ANALYSIS OF OPERATED PATIENTS WITH PERTROCHANTERIC FRACTURE

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The authors give an overview analysis of late results fracture treatment using the DHS method and the angle plate from year 2000.-2006., and a retrospective analysis of late results in limitations of extremity mobility in operated patients. Fracture type A1 and A2 were analyzed from year 2000.-2006. Out of all 379 patients, 14,5%(55 patients) replied to our control check after 1-7 years post surgery. A significant decrease in hip mobility is noticed by statistical analysis of the obtained results whether in flexion or abduction, equal in the surgically treated extremity by DHS method and angle plate. By statistical analysis we administered a ratio in hip mobility between the healthy and treated extremity (Angle plate;P=0.004, DHS method;P=0.002), as well as the mobility difference in patients surgically treated with the angle plate method and others treated with the DHS method (A significant lag of P=0.002 from angle plate to DHS method). There is a significant difference in hip flexion in both methods, P=0.0009. While no significant difference in abduction movement. All patients that replied to the control check after four months from surgery walked with no aids. Complications were encountered in only three cases of infection (0.79%), and one case (0.28%) of wound revision with Spüll drainage install. In the observed group, no cases of early mortality were found, whereas the information of later mortality, after releasing the patient to home care, could not be revealed. In conclusion, it is clear that the DHS method gives better results, which we consider a better method in pertrochanteric fracture surgical treatment.

Abstract no.: 28568

**LONG-TERM RESULTS AND EFFECTS OF MINIMAL OSTEOSYNTHESIS
IN TREATMENT OF TIBIAL CONDYLE FRACTURES – 18 YEARS
EXPERIENCE**

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INTRODUCTION: We report our results with per-cutaneous fixation and Minimal Osteosynthesis (MiOs) in treatment of Tibial Condyle fractures (TiCoF). Open reduction and rigid fixation requires extensive soft tissue exposure. **MATERIALS AND METHODS:** 202 patients with TiCoF attended Orthopedic and Traumatology Clinic-University Clinical Canter-Skopje from 1993 to 2011. We selected 112 cases with Schatcker fractures (tip 1-3) for per-cutaneous fixation and MiOs with AO-canulated screws. Operative procedure includes arthroscopic assisted reconstruction. X-ray and CT imaging pre-operative and post-operative was compared and evaluated. **RESULTS:** The analysis of results was focused on complications and muscular atrophy. We evaluated results with FEKROM- Functional Evaluation of Knee range of Movement. FEKROM is modification of knee-rating scale of Sanders and all (1991) and Rasmussen functional criterion. **DISCUSSION:** The results suggest that MiOs is effective technique and treatment of choice. 86% of patients have excellent and good results, and they are return to normal life activities without pain.

Abstract no.: 28570

THE PLASTIC COLLAGEN MATERIAL'S APPLICATION AT THE SURGICAL TREATMENT OF GOOD-QUALITY BONE TUMOURS

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Materials and methods: 35 patients with primary good-quality tumours and similar diseases of bones and joints (33 patients the radical resection of the center was carried out, 2 – after tumour relapse) were under our supervision since the year 2005 on the present. The modern collagen material Collost has been used by us, for the first time in clinic, as a stimulator of osteogenesis and for a plasticity of defects after a radical resection. Collost is a bioplastic collagen material with completely kept fibrous structure, providing the regeneration of the amazed fabrics. The 1 type collagen is most full presented. The Collost clinical advantages concern: the considerable reduction of a pain, the wounds inflammations and the liquid losses, the drying prevention in superficial wounds, the increase of the epithelialization, the ability to be combined with the pharmacologically active substances and the medical products. Collost can be used at pathological processes for an immobilization and the local prolonged delivery in the center of defeat of various medical products. Results of research= The Collost application creates optimum conditions for the bone regeneration: there is an effective restoration of bone structure, processes of formation and maturing bone trabecular become more active. Conclusions: The structured plastic material Collost possesses the expressed osteogenic properties, allowing to replace effectively a bone autoplasty at filling post-resection defects after radical removal of the tumoural center. The application of Collost restores the morphological structure of plastically restored bone, reduces terms of functional treatment and rehabilitation of patients with bone pathology.

Abstract no.: 28572

ANTHROPOMETRIC STUDY OF PROXIMAL FEMUR GEOMETRY AND ITS CLINICAL APPLICATION

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Since build, physique, habits and genetic make up vary markedly in different ethnic groups, it is possible that anthropometric dimensions described as normal for proximal end femur for Westerners might be quite different from those encountered amongst Indians. Seventy five pairs of cadaveric femora were studied morphologically and radiologically using standardized techniques to obtain the following anthropometrics measurements: femoral head offset, femoral head diameter, femoral head position, femoral neck diameter, canal width, isthmus position, anteversion and neck shaft angle. The mean and S.D. of these values were calculated. These values were compared with those reported in the literature for Hong Kong Chinese, Caucasian, Chinese and Westerns. Not only the implants are large in size, their angles, as well as offsets also mismatch Indian femora. Numerous published reports have underlined the importance of close geometric fit between the femur and the implanted stem. In cemented prosthesis, it is desirable to have 2 mm cement mantle around the prosthesis. A strong correlation has been established between the occurrence of thigh pain and inadequate fit and fixation of the implant. The intraoperative complications like splintering and fractures ranges from 4 to 21%. These are due to over-sized implants available that have been manufactured basically with western parameters. It is proposed that implants designed for Western populations should be used judiciously and future implant designed customized to suit the Indian bones.

Abstract no.: 28573

**EXPERT TIBIAL NAIL IN META-DIAPHYSEAL FRACTURES OF TIBIA
– A STUDY OF 50 CASES**

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Background: Intramedullary nailing is an effective and well-established method for the treatment of a wide spectrum of tibial fractures. Nevertheless, the handling of metaphyseal, segmental and open tibial fractures remains challenging. Numerous modifications in nail and screw design have led to the development of the Expert Tibial Nail. It enables the surgeon to further extend the spectrum of fractures eligible for intramedullary nailing. **Methods:** A prospective study was conducted in 50 skeletally mature patients with unstable fractures of tibia. Thirty-two (64%) fractures were in lower 1/3rd, 15(30%) fractures in proximal 1/3rd of the tibia; and 3(6%) were segmental fractures. 34(68%) were closed and 16(32%) were open fractures 3(6%) Grade I, 7(14%) Grade II, 1(2%) Grade IIIA and 5(10%) Grade IIIB. Using trans/para patellar approach expert tibial interlocking nail was done achieving fracture reduction by close methods or open method. **Results:** Results were assessed on the basis of Johner and Wruh criteria. Acceptable radiographic alignment, defined as <5 degrees of angulations in any plane, was obtained in forty six patients (92%). Forty-six (92%) of fracture united radio logically in average duration of 18.5 weeks. Complication included two (4%) delayed union, two (4%) non union, superficial infection two (4%) and one (2%) deep infection, screw back out in 1 (2%) and one (2%) screw breakage while dynamization. The overall functional outcome was excellent or good in 44 (88%) patients, fair in 2 (4%) and poor in 4 (8%).

Abstract no.: 28574

A SIMPLE METHOD TO MINIMIZE LIMB LENGTH DISCREPANCY AFTER TOTAL HIP ARTHROPLASTY (HEAD CENTER TO PROXIMAL END OF LESSER TROCHANter DISTANCE USING THE PACS)

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Introduction: To minimize leg length discrepancies (LLD), preoperative measures are taken using the PACS; the head center to the proximal end of the lesser trochanter distance (HLD) of the opposite side of the operating limb are calculated, while during operation, the modular neck selection is adapted to equal the opposing limb's length. The purpose of this study was to see whether the HLD method would show far less occurrences of LLD, in comparison to the conventional method (preoperative templating and shuck test). **Method:** 349(412hips) patients who had undergone THRA were divided into two groups based upon which methods they had used to equalize limb length during operation: (1) HLD method, and (2) conventional methods. Six months after surgery, using the PACS system, LLD's of the two groups were compared. **Results:** The mean postoperative LLD was 2.6 ± 4.2 (0–15) mm in the HLD group and 5.2 ± 7.0 (0–23) mm in the conventional group. In the HLD group, 81% (174/215) of the hips had LLD < 6 mm after surgery versus 72% (141/197) of the hips in the conventional group ($P < 0.038$). **Conclusion:** Statistically, there was a significant difference of LLD between the two groups ($p=0.038$). HLD method, which is non-invasive and simple, would minimize LLD after total hip arthroplasty.

Abstract no.: 28575

FIFTEEN YEARS FOLLOW-UP STUDY OF CEMENTED TOTAL HIP ARTHROPLASTY

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Aim: to evaluate the functional and radiological outcome of primary total hip replacement (THR) using modular total hip system at 4-15 years follows – up. Materials and Methods: The cohort comprised 300 operated cases for total hip replacement using modular hip system, with an average follow up of 7.07 years ranging from 4-15 years. In 153 cases cemented THR, in 39 cases hybrid and in 108 cases uncemented THR was done. Harris hip score was used for clinical evaluation. Osteolysis was recorded in three acetabular zones described by DeLee and Charnely and the seven femoral zones described by Gruen et al. Results: The average age at operation was 52.46 ± 9.58 years. Twenty one patients died due to causes unrelated to surgery. At the last follow-up mean Harris Hip Score was 83.5. Radiolucent lines were present in 99 (33%) acetabular and 81 (27%) femoral component. Twenty hips have been revised, twelve for aseptic loosening as proved by negative culture at revision and eight hips for post traumatic periprosthetic femoral fractures. One girdle stone resection was done for deep infection. Out of 278 hips available for at latest follow-up 255 arthroplasties were intact and functioning well. Conclusion: The results of our study support the continued use of the cemented modular hip system. The acetabular loosening was more common than femoral in our study.

Abstract no.: 28576

PROXIMAL HUMERAL FRACTURE – MANAGEMENT THEN AND NOW

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Background: Proximal humeral fractures constitute third most common fracture in elderly patient after hip and colle's fracture. Aim of treatment is restoration of painless shoulder with satisfactory functions. Both conservative and operative options available but none of the method is absolute. **Materials and methods:** We prospectively assessed the outcome after an average follow-up of 24 months in 100 patients. Mean age was 46 years. Fifty eight fractures were two parts, 22 were three parts, 9 were four part and 11 were fracture dislocation. Thompson Henery (Deltpectoral) approach was used. Definitive fixation using A.O. buttress T-plate in 42 cases, blade plate in 32 cases and locked plate in 16 cases was done. Post-operatively Valpeau bandage given for first few days and exercise schedule started. **Results:** Patient evaluated by Neer's assessment criteria with excellent results in 36 patients, satisfactory in 48 patients and unsatisfactory in 16 patients. The immediate complications included superficial infection in 4 patients, malpositioning of implant in 6 patients and deep infection in 1 patient and among late complications were osteomyelitis in 1 patient, bicipital tendenitis in 4 patients, periarthritis shoulder in 19 patients and restriction of movement in 26 patients. **Conclusions:** Active management by open reduction and internal fixation especially in young patients give gratifying results. For good functional results meticulous repair of rotator cuff is essential. Proximal humeral locking plate is a new implant for fixation of PHF especially in elderly osteoporotic bones.

Abstract no.: 28578

RESULTS OF DISTAL LOCKING PLATE IN DISTAL RADIUS FRACTURES

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Background: We evaluated the radiographic and functional results of volar locking plate fixation of unstable distal radius fractures. **Material and Methods:** This study included 50 patients, with mean age 37.72 years treated with volar locking plate fixation for unstable distal radius fractures. Forty four (88%) patients had AO type C fractures and six (12%) patients had type B fractures. According to Frykmann classification majority 32 (64%) fractures were of type IV. Mode on injury was fall on outstretched hand in 29 (58%) patient and RTA in 21 (42%) patients. Dorsal and volar angulations were present in 41 (82%) and 9 (18%) patients respectively. Nineteen patients (38%) had disruption of the distal radio-ulnar joint. Autologus iliac bone grafts were used in 12 (24%) patients. **Results:** All fractures united without any problem with in mean of 6.2 weeks. Functional end results were assessed according to Lidstrom's criteria and Gartland and Werley scoring system. According to Lidstrom criteria 19 (38%) patients had excellent, 20 (40%) had good, 6 (12%) had fair and 5 (10%) had poor results. According to Gartland and Werley 35 (70%) patient had excellent, 8 (16%) had good, and 7 (14%) had fair results. One patient developed superficial infection, eight patients had painful wrist, and three patients developed sudeck's dystrophy, screw pull out in one patient. **Conclusion:** Volar locking plate is an effective treatment in the anatomical and functional restoration of unstable distal radius fractures.

Abstract no.: 28580

WINDOW APPROACH FOR TOTAL HIP REPLACEMENT

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Total hip arthroplasty has emerged as one of the major breakthroughs in modern day orthopaedics. The optimum approach for Total Hip Arthroplasty is hotly debated. We analyzed patients using postero-lateral window approach to hip for total hip replacement. We used patient holding anterior and posterior posts. Greater trochanter was used as surgical landmark and incision was given obliquely toward the posterior superior iliac spine. Fascia lata was incised and charnely self retaining retractors were applied. Plane developed between gluteus medius and piriformis. Short external rotators stay sutured. Capsule was divided in L shaped fashion. Hip dislocated posteriorly and femoral neck osteotomy done. One cobra retractor was placed along anterior margin of acetabulum and another cobra retractor was placed below transverse acetabular ligament inferiorly. Steinman pin was placed superiorly in ilium to act as retractor and guide for acetabular cup placement. Global view of acetabulum was visible after proper placement of retractors. For femoral exposure upper part of window was used. One homans retractor was placed around lesser trochanter. Bipronged retractor was placed below greater trochanter to avoid tissue maceration. After femoral preperation and implantation of prosthesis reduction was done checking for soft tissue tension. After reattachment of capsule & short external rotators closure completed in layers. All complications, during and after surgery, were noted with special emphasis on incidence of dislocation and factors contributing to it. We conclude that the window approach is compatible with a low overall rate of early complications especially dislocation.

Abstract no.: 28581

**SYNCHRONOUS DOUBLE CANCER OF MALIGNANT PHOSPHATURIC
MESENCHYMAL TUMOR AND THYROID CARCINOMA: A CASE REPORT**

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Phosphatouric mesenchymal tumor (PMT) is a rare neoplasm presenting as tumor-induced osteomalacia (TIO) caused by overproduction of fibroblast growth factor (FGF)-23. Among them, few malignant cases have been reported in the literature. Here we report an extremely rare case of malignant PMT, which took place as synchronous double cancer. A 35-year-old woman was referred to our Hospital due to increased serum alkaline phosphatase (ALP) level along with low back pain. On physical examination, a mass lesion was found on her right neck. A needle biopsy resulted in papillary thyroid carcinoma. Meanwhile, an osteolytic lesion and multiple uptakes were observed on pelvic X-ray and FDG-PET, respectively. From these findings, we clinically diagnosed multiple bone metastases of papillary thyroid carcinoma and performed radiotherapy for the acetabular lesion and total thyroidectomy for the primary tumor. However, the serum thyroglobulin level completely normalized soon after surgery. And a postoperative bone scan showed characteristic linear uptakes on ribs suggesting pseudofractures by TIO. At 7 months after the first presentation, we performed open biopsy of the acetabular lesion and confirmed malignant PMT. The serum ALP and phosphate levels were gradually normalized by supplementation of phosphate. The multiple uptakes on FDG-PET also disappeared except the acetabular lesion, indicating that those uptakes were not malignancy. Although synchronous double cancer is very rare, the characteristic bone scan, lowered serum phosphate and high ALP levels provided high diagnostic values for TIO. It is also noteworthy that TIO shows multiple uptakes on PET, which might be a pitfall of this modality.

Abstract no.: 28582

SURGICAL INTERVENTION FOR SPINAL DEFORMITY ASSOCIATED WITH GALACTOSIALIDOSIS

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Galactosialidosis is a type of lysosomal disease. It is an extremely rare autosomal dominant inherited disorder characterized by facial and skeletal abnormalities, myoclonus and ataxia. We report a patient who underwent surgery for galactosialidosis-related spinal deformity, showing a favorable course. The patient was a 50-year-old male. There were no marked changes at birth. After 20 years of age, the facial features altered, and gait disorder deteriorated. At the age of 50 years, the patient consulted our hospital with pain of the bilateral anterior femur. Lumbar radiograph showed hypoplasia and bill-like deformity of the L2 vertebral body, which is characteristic of this disease, narrowing of the L1/2 intervertebral space, and topical kyphosis. Considering kyphosis-related nerve root symptoms, fenestration between the L1/2, decompression of the L2 nerve root, and posterolateral fusion involving the T12 to L3 were performed. Immediately after surgery, pain of the lower limbs disappeared. During the 6-months postoperative follow-up, bone assimilation was achieved, showing a favorable course. When histologically examining ligamentum flavum collected during surgery, large, bright cells with vacuoles in the cytoplasm were scattered, and collagen was absent at the periphery. With respect to this disease, no study has reported surgery for the thoraco-lumbar vertebrae. A large number of patients may complain of symptoms of the lower limbs, as demonstrated in the present case. The etiology of spinal deformity remains to be clarified. However, a surgical vertebral approach for this disease is important. This is the first report on vertebral surgery for this disease and the histological examination of spinal ligaments.

Abstract no.: 28590

CALCIFICATION AROUND THE ODONTOID PROCESS AND CALCIFICATION OF PERIPHERAL JOINT IN THE PATIENTS OF CERVICAL LIGAMENTUM FLAVUM CALCIFICATION

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Introduction: Calcification of the cervical ligamentum flavum (CLF) is an uncommon condition which often manifests cervical myelopathy. Recently crowned dens syndrome (CDS) which demonstrates calcification around the odontoid process has been pointed out the correlation with calcium pyrophosphate dehydrate (CPPD) deposition of peripheral joint by some authors. We describe the correlation between CLF and calcification around the odontoid process, also the correlation between CLF and CPPD deposition of peripheral joint. **Methods:** Seven patients of CLF were analyzed. Four patients that were at first clinically diagnosed CLF by cervical myelopathy were treated with spinous process-splitting laminoplasty at from C3 to C7. Three patients that were at first clinically diagnosed peripheral arthritis with CPPD deposition were pointed out CLF incidentally when examining calcification around the odontoid process by computed tomogrphy. They were treated conservatively because of mild myelopathy. We evaluated calcification around the odontoid process and calcification of peripheral joint in the patients of CLF. **Results:** Patients ranged in age from 66 to 96 (mean 80). One is male and six were females. All patients revealed calcification around the odontoid process. All patients revealed calcification of peripheral joint such as knee, wrist, or shoulder. **Conclusion:** Some authors had pointed out correlation between CPPD deposition of peripheral joint and CDS or CLF. However any authors had not mentioned calcification around the odontoid process in CLF patients. This study demonstrates that CLF patients associate with calcification around the odontoid process and CPPD deposition of peripheral joint.

Abstract no.: 28591

BROWN-SÉQUARD SYNDROME AS A RESULT OF SPINAL CORD DECOMPRESSION AFTER SURGICAL RESECTION OF A VERTEBRAL OSTEochondroma

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Objectives: To review and compare radiological studies, surgical treatment and postoperative evolution between the case we present and other cases found in international publications. **Case study:** 36 year old male patient with chronic cervicobrachialgia, who after a traffic collision underwent a CT scan which showed a large osteochondroma originating from the posterior aspect of C5 with a 65% occupation of the spinal canal. It was confirmed by an MRI study. The lesion observed, deforms the spinal cord, without any signs of compressive myelopathy. Electromyogram revealed signs of C5-C6 motor radiculopathy and alterations of sensory conduction of the posterior nerve roots. A hemivertebrectomy was performed with posterior reconstruction using an expandable cage and arthrodesis of C4-C5, with intraoperative monitoring using evoked potentials. No intraoperative complications were encountered, and postoperative neurological exploration was normal. 48 hours after surgery, the patient presented symptoms of incomplete left hemiparesis and right hemihypoesthesia symptoms located on both leg and hemithorax. An urgent MRI study was carried out showing the spinal canal completely occupied by the spinal cord and an area of myelitis, without any sings of external compression. An incomplete Brown-Séquard syndrome was diagnosed, which possibly had a decompressive origin and a steroid therapy was immediately started. Seven months late, the patient has regained complete motor and practically complete sensory function; he has completed the rehabilitation treatment and is followed up closely by the treating traumatologist and neurologist. **Conclusions:** Vertebral osteochondromas are unusual and if they are associated to compressive neurological symptoms, these tend to cease completely after surgical decompression. What is remarkable about this case is the development of a Brown-Séquard syndrome within 48 hours after the surgery that was resolved nearly completely after 7 months.

Abstract no.: 28594

AN AUTOPSIED CASE OF INTRAVASCULAR MALIGNANT LYMPHOMATOSIS ASSOCIATED WITH MALIGNANT PERIPHERAL NERVE SHEATH TUMOR SEVEN YEARS AFTER WIDE RESECTION

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Purpose: Intravascular malignant lymphomatosis (IML) is an extremely rare disorder by proliferation of malignant lymphoid B cells within the lumens of small vessels which often manifests neurologic signs and symptoms. We report on a woman who initially presented with spinal cord compression at T6. Case: A 78-year-old woman was hospitalized because of paralysis of bilateral lower extremity seven years after wide resection of malignant peripheral nerve sheath tumor (MPNST) of the left thigh. MR imaging demonstrated diffuse low signal area of vertebral body from T1 to T12 on T1WI and intradural mass at T6. However the radiograph and CT did not reveal abnormal mass in the lung. On the 11th hospital day, the patient demonstrated dyspnea, hypoxemia, hepatic and renal dysfunction. On the 25th hospital day, she died by multiple organ failure. She did not reveal abnormal cerebral symptoms. The autopsy demonstrated infiltration of large B cell lymphocyte to right lung, liver, spleen, pancreas head, sixth thoracic vertebral body and spinal cord at T6. Metastasis of MPNST did not show in any organs. Conclusion: The most frequent metastatic organ of MPNST is lung and metastasis to the vertebral body and spinal cord is very rare. IML is often diagnosed at autopsy because of occasional aggressive clinical course and poor prognosis. Central nerve system involvement usually presents as dementia, seizures, or multifocal cerebrovascular events. However, some cases such as in our case which involved only spinal cord without brain has been reported.

Abstract no.: 28595

**A COMPARATIVE STUDY OF THE COMPRESSION HIP SCREW AND THE
IPT NAIL FOR FEMORAL TROCHANTERIC FRACTURES**

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Purpose: The purpose of this study is to compare the results between the compression hip screw (CHS) and the IPT nail (Impacted Technology nail) for the treatment of femoral trochanteric fractures. Methods: One hundred one patients were treated with the CHS, and 130 patients were treated with the IPT nail. The fracture types were 52 stable, 49 unstable and 45 stable, 85 unstable types, respectively for the CHS and the IPT nail. Postoperative deterioration of walking ability, telescoping of lag screw in unstable fractures, and postoperative complications were evaluated. Results: There was not significant difference in postoperative deterioration of walking ability between two groups. However, the average telescoping of lag screw in unstable fractures was 16.1 mm and 6.2 mm, respectively in the CHS and the IPT nail group. Postoperative complications were six cases of lag screw cut out, one case of non-union and two cases of cortical screw breakage in the CHS group. While in the IPT nail group complications such as lag screw cut out, non-union, femoral shaft fracture and Z effect did not occur. Conclusion: The IPT nail is an intramedullary nail with biaxial fixation for the purpose of preventing the rotation of femoral head. The feature is that the end cap prevents the lag screw rotation to nail but permits the telescoping of lag screw and another screw. We recommend the use of the IPT nail for unstable femoral trochanteric fractures.

Abstract no.: 28600

WE CAN USE ARTHROSCOPY FOR EVALUATING THE GRAFT EXTRUSION AFTER LATERAL MENISCAL ALLOGRAFT TRANSPLANTATION

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In magnetic resonance imaging (MRI), the meniscus is considered "extruded" when it extends beyond the tibial margins and extrusion of more than 3mm is considered abnormal. Identifying the meniscal extrusion intraoperatively either during operation or at during secondary operation may be difficult because of the simple fact that most of the arthroscopic procedures are done in knee flexion position while follow up MRI is taken at knee extension position. Here, we demonstrate the arthroscopic technique for evaluating the meniscal extrusion. Although this routine view allows evaluating the meniscus tissue itself; that is meniscal tear, anterior/posterior horn area abnormalities etc.; it is difficult to identify the presence of extrusion. But when the knee is placed in extension position with the scope positioned between the lateral femoral condyle and the grafted meniscus, it is then possible to identify status of meniscus. In conclusion, if the meniscal extrusion is determined by the postoperative MRI taken in knee extension position, it is reasonable to evaluate the status of meniscus intraperatively in knee extension position. Lateral gutter view using the conventional anterolateral portal as described would be helpful.

Abstract no.: 28601

THE LEARNING CURVE OF MICROSCOPIC FLAVENTOMY FOR LUMBAR STENOSIS USING DETACHABLE SPINAL RETRACTOR

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Minimally invasive surgery for the lumbar stenosis has been popular. However, it takes time to be mastered. A microscopic flavectomy (unilateral approach for bilateral microscopic decompression: UMD) for lumbar stenosis using detachable spinal retractor (DePuy spine, Japan) has been performed in our department since 2003. The aim of this study was to examine the learning curve of UMD by investigating the operation records. We retrospectively reviewed 83 patient who underwent microscopic flavectomy by the same doctor. There were 36 male and 47 female patients. The mean age was 67.5 years, and the mean follow-up period was 24 months. The disorders were cauda equine type and mixed type in 43 patients, and radiculo type in 40 patients. The number of decompression level was one in 61 patients, two in 20 patients, and three in 2 patients. Bilateral entry was conducted for those cases in which intra-canal stenosis is severe due to overhang of the articular process. Operation time, intra-operative blood loss, perioperative complication, and improvement rate of the JOA (Japanese orthopaedic association) score were investigated. The mean operation time required for single level was 130.8(64.0-329.0) min, but the operation time was variable in this series even though the operation number increased. The mean intra-operative blood loss was 25g. The blood loss was less than 5g since 35th case. As the perioperative complications, the dural tear was observed in two patients, the symptomatic epidural hematoma in one patient, and the misidentification of the operation level in one patient. There was no perioperative complication since 30th case. The JOA score improved in all the cases (mean improvement rate: 73.9%). The improvement rate was variable in this series. In conclusion, the learning curve became stable since 35th case, which is based on the intraoperative blood loss and the complication occurrence.

Abstract no.: 28603

BILATERAL, LOCKED, RECURRENT ANTERIOR SHOULDER DISLOCATION: CASE REPORT

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Bilateral anterior dislocation of the shoulder is a rare condition. Most of the cases are seen as posterior dislocations and generally occurs during diffuse tonic-clonic contractions of epileptic seizures or after exposing to strong electric shock. On the other hand, it is reported that bilateral anterior dislocation of the shoulder can be seen in epileptic patients, drug dependent patients with diffuse contractions, diabetic nocturnal hypoglycemia, voluntary dislocating patients with joint laxity and after traumas. Our case was an epileptic soldier aged 21, who had severe bilateral shoulder pain and joint restriction. We used shoulder X-rays and CT scan to diagnose locked anterior bilateral shoulder dislocation and Hill-Sachs lesions. After reduction had been established under general anesthesia, arthroscopic treatment was planned to correct recurrent instability. We used arthroscopic Bankart repair and remplissage technique in surgical treatment of both shoulders. In literature, posterior dislocations of shoulder are usually seen during epileptic seizures but anterior dislocations are rare. This can lead to delay in diagnosis. CT scan is helpful in uncertain patients. It should not be forgotten that recurrent dislocations can be seen in epileptic patients and they should be followed up regularly and instability must be treated to prevent excessive damage.

Abstract no.: 28604

RESULTS OF THE TREATMENT OF HALLUX VALGUS WITH NEW THREE-DIMENSIONAL DISTAL METATARSAL OSTEOTOMY

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Purpose: To present clinical and radiological results of hallux valgus treatment with new distal three-dimensional first metatarsal osteotomy. Methods: The study included 129 female patients (152 feet) operated with new method at our department between April 2000 and December 2009. All patients were operated by first author because of hallux valgus deformity. Average age at the time of surgery was 44 years (18-70) and average follow-up 4.6 years (1-10). All results were evaluated according to AOFAS (Hallux Metatarsophalangeal-Interphalangeal Scale). Results: Postoperative AOFAS increased from 47.8 to 92.6. Good and excellent result was achieved in 142 cases (93.4%), in 8 cases result was satisfactory and in two cases result was bad. Postoperative radiological results were significantly better ($p<0,001$). Hallux valgus angle decreased from average 29.8° to 8.8° . First intermetatarsal angle decreased from 12.8° to 5.1° . Distal metatarsal articular angle decreased from 14.6° to -2.9° . Length of the first metatarsal was on average 6.5 mm shorter postoperatively. Position of medial sesamoid improved from 2.1° to 0.3° . Angle of the first metatarsal in sagittal plane improved from 22.9° to 28.5° . Pronation angle decreased postoperatively from 6.3° to -0.4° . Conclusion: New distal three-dimensional first metatarsal osteotomy is very successful in correcting all components of mild to moderate hallux valgus deformity. With this technique one can achieve predictable and longstanding results. Stabile osteosynthesis allows for generous fragment dislocation in all three planes together with quick healing and short and easy recovery. Complications are rare and easily manageable.

Abstract no.: 28605

METAL-METAL TOTAL HIP REPLACEMENT IN YOUNG PATIENTS

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Total hip replacement in young and active patients should be more durable. For these patients, offered a pair of friction prosthesis with metal-metal, which have minimal wear. The purpose of the study was to assess the clinical and radiographic results of primary metal-metal total hip replacement in young patients. A retrospective analysis was performed in 8 patients (11 hips) who underwent metal-metal cementless arthroplasty. We analyzed the clinical and radiological signs. Patients were operated in the period from 2006 to 2010. Patient age was 25-40 years, all patients were male. We used large-diameter prosthetic head from 48 to 52 mm. Three patients had femoral neck fracture; the other had avascular necrosis of the femoral head. Evaluation results showed the disappearance of pain, increase range of motion. X-ray analysis showed complete osseointegration of all implant components. Condition of the patients according to the functional scale of Harris in the postoperative period was 95 points. Conclusions: These results show that metal-metal hip arthroplasty are indicating for young men with a high degree of activity. Metal-metal prostheses allow more rapid restoration of function of damaged limbs.

Abstract no.: 28606

**QUALITY OF LIFE IN KYPHOTIC OSTEOPOROTIC ELDERLY PATIENTS
TREATED WITH LONG INSTRUMENTED CORRECTION SURGERIES
FROM HIGH THORACIC TO SACRUM**

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Introduction: The purpose of this study was to evaluate quality of life in osteoporotic elderly patients after surgical correction for kyphotic deformity with long instrumentation from high thoracic to sacrum. **Methods:** Surgical group included 19 patients aged 65 years and older at the time of surgery (average: 72.4 years) with a minimum 2 years follow-up. Control group included 29 patients treated for osteoporosis chosen from a hospital outpatient department. They were age-matched (average: 73.3 years), and did not have any medical conditions affecting for daily living (recent vertebral fracture or osteoarthritis of hip or knee or chronic disease). To evaluate quality of life outcomes, all patients were administered both the SRS-22 and the SF-36. **Results:** The average score of each domain of SRS-22 were as follows; in surgical group, function was 3.4, pain was 3.8, self image was 3.4, mental health was 3.4, and satisfaction/dissatisfaction with management was 3.6. That in control group (except satisfaction) was 3.4, 3.1, 2.8, and 2.9, respectively. The result in pain of both groups was significantly different. The average scores of each domain of SF-36 were as follows; in surgical group, physical function was 55.9, role physical was 52.4, bodily pain was 62.5, general health was 57.1, vitality was 57.9, social function was 69.1, role emotion was 66.7, and mental health was 68.9. That in control group was 47.2, 43.1, 48.8, 52.9, 48.6, 72.2, 74.1, and 53.9, respectively. The all result was not statistically significant. **Conclusion:** In spite of long instrumented fusion surgery, quality of life in surgical group was almost equivalent to control group in SRS-22 and SF-36.

Abstract no.: 28607

PREOPERATIVE QUALITY OF LIFE AFFECTS OUTCOMES OF LUMBO-SACRAL SPINE SURGERY – RELATIONSHIPS BETWEEN SF-36 AND SYMPTOMS BEFORE AND AFTER SURGERY

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INTRODUCTION: SF-36 is one of the most popular scales of the health related quality of life. The purpose of this study was to clarify the relationship between preoperative SF-36 and outcomes of lumbo-sacral spine surgery. **METHODS:** 123 patients (male 70, female 53, most aged group 70') with degenerative lumbo-sacral spinal disorders were examined. SF-36 was evaluated before surgery. Visual analog scales (VAS)(0-10) of low back pain (LBP), leg pain and leg numbness, and Roland-Morris Disability Questionnaire (RDQ) were evaluated before and 1 year after surgery. Satisfaction rate (0-10) was also evaluated. The scores of SF-36 were presented as the deviation score. The score of 50 means average of Japanese population. The patients were divided into 2 groups according to their score of subscales, over 50; average score group, or under 50; low score group. Statistical analysis was performed by Mann-Whitney's U test. P-value less than 0.05 was considered significant. **RESULTS:** There was no significant difference in age, sex, preoperative LBP, leg pain, and leg numbness between 2 groups in each subscale. On Mental health (MH), there were significant differences between 2 groups in improvement of LBP and leg numbness ($p<0.05$). On Vitality (VT), there was significant difference between 2 groups in improvement of leg numbness ($p<0.05$). On Social functioning (SF), there was significant difference between 2 groups in improvement of leg pain ($p<0.05$). **DISCUSSION:** The results of this study suggested that preoperative MH, VT, and SF affect outcomes of lumbo-sacral spinal surgery. Low MH indicates nervous and depressive mood, low VT indicates continuous fatigue, and low SF indicates that associations with other people are disturbed by physiological or psychological problems. The patients who keep their quality of life on these points before surgery may get better outcomes of lumbo-sacral spine.

Abstract no.: 28611

ROLE OF POST-OPERATIVE RADIOGRAPHS IN TOTAL KNEE REPLACEMENT?

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The British Orthopaedic Association recommends a post-operative radiograph (POR) following a Total Knee Replacement (TKR) prior to discharge from hospital. The evidence underpinning this recommendation is not clear. Hence, an audit of 444 sequential TKRs (September 2009 – August 2010) was undertaken to determine if any intervention occurred as a result of the POR. The expectation (standard) is: all TKRs to have had POR before midday on third post-operative day to allow discharge by the end of the third or fourth day. Data for the audit was extracted from the hospitals prospective database. The date and time of the POR was identified from the Picture Archiving and Communication System. The full data sets were available for 436 (98%) cases. 430 (99%) of radiographs were performed as an in-patient (mean 2.69 days, range 0-42 days). 124 (28%) of radiographs were performed after midday on day three. 96 (22%) were performed on the day of discharge. There is evidence that in some cases discharge was potentially delayed whilst waiting for the POR. No cases had an intervention as a result of the POR although, 12 (3%) of cases returned to theatre for various procedures including knee washouts, knee MUA, ankle injections, pseudoanurysm repair and general surgical procedures. The results demonstrate no clear evidence to support inpatient POR if it will delay discharge given that it can be undertaken at the first outpatient follow-up.

Abstract no.: 28612

PSOAS ABSCESS IN HEROIN ADDICT – A CASE REPORT

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Background: Injection drug abuse has reached epidemic levels in Serbia. Complications depend mainly on the drug, the dose injected, the method of delivery, the site of injection and the presence of infectious agents. **Case:** A 33-years-old man was admitted in Emergency Center in Belgrade because of fever, anaemia, prostration and right flank pain. His consciousness was in alert condition. He had a history of regular intravenous heroin use for at least three years. Nausea, cold sweating and pain were reported one week ago; then he visited general surgeon and some analgesics were given. However, abdominal and flank dull pain persistent. The patient was readmitted 7 days later with a history of right illiac fossa pain and swelling at in the proximal part of femur. The physical examination revealed a red, hot, painful swelling of the right groin and leg and mild tenderness over the right lower abdominal quadrants. CT of the abdomen and pelvis showed 12x4cm large abscess of the right psoas muscle. A percutaneous drainage of the right psoas muscle was performed. The abscess was explored and 750 ml of pus was drained. He continued his intravenous antibiotic treatment for two weeks and oral antibiotics for 4 weeks. **Conclusion:** The abscess may present as back pain, pyrexia of unknown origin, groin pain that mimics a septic hip, increased frequency of micturition, or abdominal pain. A good physical examination is critical for the prompt diagnosis of psoas abscess. The current standard of care is percutaneous CT-guided drainage of the abscess.

Abstract no.: 28614

ARTHROSCOPIC FIXATION FOR THE GREATER TUBerosity FRACTURES OF THE HUMERUS – A BIOMECHANICAL STUDY

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Introduction: In patients with displaced humeral greater tuberosity (GT) fractures >5 mm, surgical intervention is suggested. Arthroscopic fixation provides the advantages of minimizing soft tissue dissection and associated morbidities. The purpose of this study was to analyze the biomechanical strength of different arthroscopic fixation techniques for the management of GT fractures. **Methods:** Eighteen fresh-frozen cadaveric shoulder joints were used in this study. Three different fixation techniques were used: Double-Row Suture Anchor Fixation (DR Group), Suture-Bridge Technique (SB Group) and Two Screw Fixation (TS Group). Each specimen was cyclically loaded until failure of construct. The fracture displacement with cyclic loading and load to failure were compared in these three groups. **Results:** The mean force to create 3 mm displacement was 263 N for the DR group, 321 N for the SB group, and 187 N for the TS group. There were significant differences between SB and DR groups ($P<0.05$) as well as TS group ($P<0.05$), and DR and TS groups. ($P<0.05$) The mean force to create 5 mm displacement was 370 N for the DR group, 399 N for the SB group, and 249 N for the TS group. There was no significant difference between DR and SB group. Both groups showed significantly higher values than the TS group. ($P<0.05$) Regarding the load to failure, there was no significant difference between DR (480 N) and SB (493 N) group. But both groups showed significantly higher values than the TS group (340). ($P<0.05$) **Conclusion:** Our study showed that the constructs of arthroscopic fixation methods provided sufficient stability. The DR Group and SB Group had comparable loading force of fracture displacement and failure load, and both methods achieved superior results compared with TS Group.

Abstract no.: 28622

PROXIMAL FEMORAL NAIL ANTIROTATION (PFNA) IN THE TREATMENT OF PERTROCHANTERIC FRACTURES IN ELDERLY PATIENTS

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Background: Treatment of pertochanteric fractures in elderly patients have some difficulties in point of obtain and maintain stable fixation due osteoporosis. Although many implants have been developed to solve this problem, there has been controversy in implant choise.

Methods: We present consequent 78 pertochanteric fractures treated with proximal femoral nail antirotation (PFNA). The fractures were reduced closely and fixed PFNA. Seven patients died within 8 months. The remaining 71 patients' follow up details were retrieved. The average age of the patients was 80.75 ± 6.42 (71-96) years. **Results:** All fractures healed in average of 14 weeks. The mean operation time was 44.68 ± 8.44 (30-73) minutes and the mean blood loss was 126.77 ± 49.04 (50-300) ml. One patient was reoperated for poor blade position. In three patients lateral cortex fracture and in one patient greater trochanter fracture was seen. At the final follow-up 78.7% of patients returned their preinjury activity level. **Conclusion:** PFNA might be choise of treatment to solve mechanical problem of these fractures with better fixation strength, simpler technique, shorter operation time and less blood loss.

Abstract no.: 28627

**IPSILATERAL SIMULTANEOUS SHOULDER AND ELBOW DISLOCATION:
A CASE REPORT WITH A REVIEW OF THE LITERATURE**

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Only six patients reported in the international world literature with ipsilateral dislocation of the shoulder and elbow. We reported a 48 years old woman suffered ipsilateral shoulder and elbow dislocation. First she presented to regional hospital and the radiographs at the time of injury revealed posterolateral dislocation of elbow, no radiographs of the shoulder had been taken and shoulder dislocation had been missed. Three days after trauma, she presented our hospital and radiographs showed the missed anterior fracture-dislocation of shoulder. Under general anaesthesia the shoulder was reduced. At final follow-up, 2.5 years later, the elbow and the shoulder were pain free and had full range of motion. Following a high energy trauma in upper extremity, radiographic control of the shoulder, elbow and wrist ipsilaterally shall be indispensably performed in case of suspicion.

Abstract no.: 28628

**THE COMPARISON OF INTRAOPERATIVE AND CT METHOD OF THE
“CONDYLAR TWIST ANGLE” MEASUREMENT IN THE TOTAL KNEE
ARTHROPLASTY**

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In the group of 119 total knee replacements CTA was measured pre- and postoperatively on CT scan and intraoperatively during surgery. The results were analyzed statistically. The intraoperative and CT method of measurement are presented. Our group included 40.3% males and 59.7% females, 49,6% right and 50.4% left TKRs. Average measured preoperative CTA was 4.82° (2°..8.5 °), intraoperative 3.66° (0°..9 °) and postoperative 1.1° (-2°..4°). In comparison of preoperative measurement using CT with intraoperative measurement in 46% of knees lower angle was measured during surgery, in 37% the angle was equal and in 17% the value during surgery was higher. We proved that angle measured using CT is on average 0,6° high than intraoperatively ($p=0.004$, signed rank test). We proved that intra-individual variability (16%) was higher than inter-individual (28%). This proves that both methods of measurement are convenient. Pearson's correlation coefficient of both methods was 0.6 which means medium strength of correlation. When comparing preoperative values with postoperative ones, in 92% decrease of CTA after the surgery was present. The average postoperative value was 1.1° (-2°...4°). In 102 TKRs the postoperative CTA was in the range of 0+2 °, which correlates with optimal values. Average decrease was 2.6° (maximum 7°). This means significant decrease of this angle ($p=0.001$, signed rank test). After the correction of mutual error of both measurements, this corresponds to average external rotation of the femoral component during surgery by 3.2 °. The differences in subgroups (males-females, right – left) were not statistically significant. Acknowledgement: Supported by IGA MZČR-NS 9726-3.

Abstract no.: 28629

**EXCESSIVE ADDUCTION CONTRACTURE ASSOCIATED WITH
BILATERAL DEVELOPMENTAL DYSPLASIA OF THE HIP: A RECTUS
FEMORIS MUSCLE VARIATION**

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6-month-old girl with previously untreated bilateral developmental dysplasia of the hip was admitted our clinic. Under general anesthesia, despite the application of percutaneous adductor tenotomy, adduction contracture was not improved sufficiently, and closed reduction was not provided bilaterally. Surgical treatment was applied for her both hip via anterior open reduction with bikini-type iliofemoral incision, on the operative observation a rectus femoris muscle variant was detected bilaterally. The rectus femoris muscle had had a distinct proximal insertion at the junction between the anterior rim of the acetabulum and the superior pubic ramus. The adduction contracture could be improved after cutting the rectus femoris muscle variant.

Abstract no.: 28633

**A FINANCIAL ANALYSIS OF REVISION HIP ARTHROPLASTY:
THE ECONOMIC BURDEN IN RELATION TO THE NATIONAL TARIFF**

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Over 7000 revision hip arthroplasty procedures were performed in the UK in 2009. These are costly operations on account of pre-operative investigation, surgical implants and instrumentation, protracted hospital stay, and pharmacological costs. There is a paucity of literature on the varied costs associated with different indications for revision surgery and the affect this has on hospital expenditure. We compared the economic costs of revision total hip replacements performed for aseptic loosening, dislocation, deep infection and peri-prosthetic fractures. Clinical, demographic and economic data were obtained for 305 consecutive revision total hip replacements in 286 patients performed at a tertiary referral centre between 1998 and 2008. The mean total cost of revision surgery in aseptic cases (n=194) was £11897 +/- 4629, septic revision (n=76) £21937 +/- 10965, peri-prosthetic fractures (n=24) £18185 +/- 9124, and in dislocations (n=11) £10893 +/- 5476. Revision procedures for deep infection and peri-prosthetic fracture were associated with longer operative time, increased blood loss and a higher number of complications compared with revisions for aseptic loosening. Total inpatient stay was also significantly greater p<0.001. Our study shows that financial costs vary significantly between the different revision subtypes which is not reflected by current National Health Service tariff rates.

Abstract no.: 28634

HEMICALLOSTASIS USING DYNAMIC AXIAL FIXATOR: MID-TERM RESULTS

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INTRODUCTION: HTO is a time-honoured treatment of medial compartment osteoarthritis. The conventional Coventry osteotomy, although still popular, is fraught with high incidence of complications. Hemicallostasis offers many advantages over other techniques. We used Dynamic Axial Fixator for Hemicallostasis and assessed its efficacy in attaining the desired alignment and changes in IS Index & Tibial Slope. **MATERIALS AND METHODS:** 37 knees in 32 patients were operated for MCOA (Ahlback grade 1-3) with Hemicallostasis using DAF. Aim was to achieve a valgus overcorrection of 2° to 8° or mechanical axis at $62.5\% \pm 12.5\%$. IS Index and tibial slope were estimated on lateral radiographs. Clinical results were evaluated using Oxford Knee Score. **RESULTS:** Average age of patients was 54.62years with mean BMI of 30.72kg/m². Average follow up period was 62.76months. At latest review, there was no significant change in ROM, IS Index or Tibial Slope. Mean HKA angle changed from 190.57° to 176.03° and average position of mechanical axis was at 58.52%. Overall, desired alignment was attained in 80% knees. The mean OKS improved from 43.05 to 19.11. Results were - 21 excellent, 13 good, 2 fair and 1 poor. All the cases with either Grade I osteoarthritis or BMI<30 had excellent or good results. Complications included pin tract infections (16.38%), delayed union (2), knee stiffness (4), lateral cortex breach (1) and ring sequestrum (1). **CONCLUSION:** Hemicallostasis using DAF offers precision in attaining desired alignment without interfering with tibial slope or patellar height.

Abstract no.: 28636

A RARE PATELLA ABNORMALITY CAUSING PAIN AND LOCKING IN AN ADOLESCENT GIRL: A CASE REPORT

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Introduction: The most common cause for locking of the knee is meniscal damage. Other causes include intra articular loose bodies, ligamentous tears and degenerative arthritides. This is the first known case of locking caused by a bony spur on the patella. Case Report: A 16yrs old female presented with a four year history of intermittent locking of the right knee. She described a painful audible 'clunk' when the knee was extended. One year previously she had undergone a lateral release via arthroscopy with no improvement. On examination she was tender over the patella tendon and medial and lateral gutters, no effusion was noted. Extension from 20 degrees to full extension revealed a palpable and audible clunk. Plain film x-rays showed a bony protuberance over the distal aspect of the patella. CT scan confirmed a posteriorly convex lobular contour on the inferior patella. (Images available for presentation). The knee was assessed arthroscopically (intra-operative images available) and the diagnosis confirmed on visualisation of the bony spur which was seen to impinge on the medial femoral condyle. An arthrotomy was made to remove the spur. Two separate validated knee scoring systems showed a significant improvement in pre- and post- operative knee function.

Abstract no.: 28642

THE NEAREST RESULTS OF APPLICATION OF A PLATE OF MEDBIOTECH FOR TREATMENT LLD

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Leg length discrepancy (LLD) is the great physical defect which, as a rule, has progressing character and conduct to secondary deformations of a spine and a pelvis. For treatment of this pathology in Belarus the special plate had been created. Materials and methods: Concerning LLD 27 patients have been operated. At 13 cases staples have been used, and at 14 plate Medbiotech. The groups are statistically comparable by sex, age and gravity of a pathology ($p>0,05$). In the first group LLD was 3,42 (from 2 to 5 sm), in the second group 3,1 (from 2 to 4,5 sm) $p<0,05$. Results: The nearest results are estimated at all 27 patients in terms to 1,5 years. LLD in the first group has made 1,59 sm (from 0 to 4 sm), and 1,35 sm (from 0 to 3 sm) in the second. We have not any complication in the group of using the Medbiotech plate whereas in group of use of staples migration of designs with angular deformation was observed in two cases. Conclusion: Treatment LLD with stapling is very effective and simple method. It has many advantages such immediate weight bearing after operation, less painful, good cosmetic result and short period staying at the clinic. When staples are used migration and sometimes failure still remains a problem in some cases. Plate is simpler to be used. It has not tendencies to migration and has more safety factor. The nearest results have shown that the plate has no disadvantages in comparing with staples and in most cases usage of plate has better result.

Abstract no.: 28647

SQUEAKING PREVALENCE IN CERAMIC-ON-CERAMIC HIP ARTHROPLASTY

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The squeaking is a complication in total hip arthroplasty with ceramic bearing surfaces which was described in 2005 although these arthroplasties HAVE BEEN used since the 1970s. It was associated with ceramic liner fracture surfaces, accentuated impingement, young patients and with unacceptable cup malposition (vertical cup). In rare cases it has been intolerable prompting revision. We realised a retrospective study reviewing total hip arthroplasties performed in our centre between 1987 and 2010. We evaluated epidemiological and surgical data, clinical and radiographic results preoperatively and postoperatively. We did 99 total hip replacements in 13 years. In 16.2% of cases we used a hybrid arthroplasty and in 84.1% cementless arthroplasty. There were 4 cases where patients had an audible squeak in normal activities, one of them was related with the fascia lata and the other 3 were true squeaking and all had vertical cup when we analysed the radiographies postoperatively. The bibliography shows that squeaking appears in 1-10% of cases from total hip replacements, our incidence was 3% of cases, and all of our cases were related to cup malposition without other risk factors.

Abstract no.: 28649

**ACL RECONSTRUCTION WITH MEDIAL THIRD OF PATELLAR TENDON
WITH BONE PLUGS**

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Background: Central third of patellar tendon with bone plugs is the standard graft used for reconstruction of anterior cruciate ligament (ACL) and is associated with risks of patellar tendon shortening, patellar tendon rupture and patellar fracture. We prospectively evaluated the outcomes of ACL reconstruction with medial third of autologous patellar tendon with bone plugs. **Methods:** ACL reconstruction was performed with medial third patellar tendon with bone plugs in 92 consecutive patients. 79 patients were available for evaluation at a minimum of three years after surgical reconstruction. All the patients were evaluated for clinical stability, Q angle, Lysholm and International Knee Documentation Committee's (IKDC) scoring systems, single leg hop test pre operatively and at a minimum of three years post operatively. **Results:** On preoperative Lachman testing, 40 patients had grade 3 laxity and 39 patients had grade 2 laxities. Post operatively 40 patients (51%) showed grade 0 laxities and 36 patients (46%) grade 1 laxity. Lysholm Knee score improved from a preoperative mean of 48 points to 92 points (81 – 96) postoperatively .On overall IKDC grading at final evaluation, 9 (11%) patients had normal knees, 66 (84%) patients near normal and 4 (5%) patients abnormal knee. None of the reconstructed knees had clinical patellar maltracking. **Conclusion:** ACL reconstruction with medial third patellar tendon yields results comparable to that of central third of patellar tendon with no additional risk of patellar tendon shortening, rupture and patellar fracture. Use of medial third of Patellar tendon does not lead to patellar maltracking.

Abstract no.: 28650

COMPLIANCE WITH THE USE OF STANDARDISED CONSENT FORMS IN LOWER LIMB ARTHROPLASTY IN THE UNITED KINGDOM

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Introduction: In 2008 the use of standardised consent forms amongst orthopaedic surgeons was recommended with support from the British Orthopaedic Association (BOA). Our hospital introduced the sole use of these forms in August 2010. In this study we assessed the compliance of use of the form since its introduction and whether the side of surgery was correctly being stated. **Methods:** We reviewed 116 patients undergoing Total Hip Replacement (THR) or Total Knee Replacement (TKR) since the introduction of the standardised consent forms. Each patient's consent form was assessed for whether it was the standardised form or the older form, whether the side of surgery was stated correctly on the form, whether the side was stated on all pages of the form and the number of risks documented when the older form was used. **Results:** Of the 116 patients, 61% had the standardised consent form and 39% had the older form. Of the 71 standardised forms, all had the site of surgery stated on at least one of the 4 pages. However, only 62% of these patients had the correct side of surgery stated on all the pages of the form. The number of risks mentioned on the old forms ranged from 4 to 12 with a mean of 7. **Discussion:** The use of standardised consent forms is theoretically of benefit. However, our findings suggest that in practice, they are not universally used and even when used, there remains some controversy over the stating of the correct side of surgery.

Abstract no.: 28652

CONSENT IN FRACTURE NECK OF FEMUR PATIENTS; COMPLIANCE WITH THE MENTAL CAPACITY ACT 2005

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Introduction: In October 2007 the Mental Capacity Act (2005) came into effect in the United Kingdom, delivering patients an inherent right to consent and providing a legal framework for doctors making decisions on behalf of individuals lacking capacity. Voluntary (Type 1) consent taken from patients without capacity constitutes battery. Best interests (Type 4) consent taken on behalf of patients with capacity contravenes statutory law with the new Act. Adequate assessment of mental capacity is therefore mandatory when obtaining consent. We reviewed the assessment of mental capacity process among patients with proximal femur fractures. **Methods:** We retrospectively reviewed 50 patients who had sustained a proximal femoral fracture to determine patient demographics; medical history; clinical assessment; mental capacity assessment; and consent documentation. In the absence of appropriate documentation an assessment was assumed not to have been undertaken, commensurate with General Medical Council (GMC) guidelines. **Results:** 43% of patients had Type 4 consent forms, of which 90% had insufficient evidence of mental capacity assessment. 57% of patients provided Type 1 consent, 8% of whom had documented evidence of a condition that may indicate a compromised mental capacity. A total of 43% of patients were potentially consented incorrectly. Only 4% were correctly assessed according to the new Mental Capacity Act Code of Practice. **Conclusions:** Many patients do not receive adequate assessment of their mental capacity. Surgeon education about the act or the introduction of a form may improve the assessment and documentation patient's capacity under the new Mental Capacity Act Code of Practice.

Abstract no.: 28654

MANAGEMENT OF PEDIATRIC SUPRACONDYLAR HUMERUS FRACTURES WITH NEW SURGICAL TECHNIQUE – CLOSED REDUCTON AND LATERAL EXTERNAL FIXATION

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INTRODUCTION: Fracture Supracondylar Humerus in Children is a common emergency in the Accident /Emergency department. Modalities of treatment ranges from – 1) Manipulative Closed Reduction and Casting 2) Closed Percutaneous Internal Fixation with cross K-wires / Multiple Lateral-K wires and Casting. 3) Open Reduction Internal Fixation with Plating Osteosynthesis Providing varying degree of results. **METHOD AND RESULT:** 50 patients with Displaced Supracondylar Humerus Fracture were subjected to this procedure. Results were good with Clinical Union - Mean time of 2 weeks. Radiological Union - Mean time of 3 weeks. Fixator Removed - Mean time of 4.3 weeks. Range of Movement at 2 months was 0° - 130°. **RECOMMENDATION / CONCLUSION:** It is a safe, effective and well tolerated treatment with High Patient Satisfaction, Cosmetically Good, Good Functional Results, and Minimal Complications. Open Reduction can be eliminated. The stability achieved by the fixator prevents secondary displacement; Iatrogenic Ulnar nerve injury is avoided. Closed reduction & Lateral External Fixation has shown promise with good stabilization, early mobilization and less hospitalization. The surgeons treating pediatric trauma will find this technique useful.

Abstract no.: 28655

LET INSTABILITY STABILISE ITSELF IN CARUES SPINE BY USING CALCITONIN

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These days the trend is towards surgical intervention in potts spine without paraplegia in the name of instability, cosmetic deformity, early ambulation. In this study on 50 patients who were treated conservatively by rifapicin, isoniasid, pza & ethambutol along with calcitonin & 50 only with all four drugs. It is found that group treated with calcitonin definitely shows better recovery in terms of relief of pain, mobility & early return to work & the need for surgery to arthrodesis the spine for pain due to instability was avoided. Good solid osseous union was seen in all the 50 patients in an average 8 to ten weeks in the group treated without calcitonin the healing was delayed by 4 to six weeks three patients needed arthrodesis. In adults destruction of one or two vertebrae usually does not lead to much kyphotic deformity both from cosmetic point of view and also from functional point or physical disability because of deformity. It is being concluded that calcitonin along with all can hasten the recovery and also can avoid major surgery in the name of instability. As calcitonin has got antiresorptive property it acts by decreasing the destructive process which is there in tuberculosis the follow up was two years. The trend is towards using implant in tuberculosis but still it should be discouraged if one can treat without surgery & without implant.

Abstract no.: 28656

**BREAKAGE OF THE THIRD GENERATION GAMMA NAIL AND A NOVEL
TECHNIQUE FOR ITS EXTRACTION**

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Introduction: Nail breakage is a recognised complication of the (second generation) gamma nail and has been reported many times in the modern literature. In 2005 STRYKER introduced the third generation gamma nail which included a number of modifications designed to prevent such a complication. Such changes included redesigning the aperture of the proximal screw hole to increase the yield point of this area, which has been a site of previous nail breakage.⁶We report the first case of nail breakage of the third generation gamma nail in the literature. **Case:** A 21-year-old 110Kg male sustained a sub-trochanteric fracture to his right femur following a fall from a wall. He underwent operative fixation with a 3rd Generation Gamma Nail (STRYKER) without any early complications, mobilising fully weight bearing from Day 1 post-operatively. After initially progressing well he re-attended at 3 months complaining of pain and inability to weight bear due to breakage of the nail at the proximal screw hole. The nail was removed with difficulty in extracting the distal nail. An open approach to the fracture site was required; the nail retrieved using the femoral head removal corkscrew. A new nail was inserted augmented by allograft as union had not yet been achieved. He mobilised touch weight bearing for 8 weeks and at review at 3 months was pain free, his x-rays being satisfactory. **Conclusion:** The gamma nail remains a suitable method of fixation of sub-trochanteric fractures however we would guard against mobilising fully weight bearing in heavy young patients.

Abstract no.: 28659

**MANAGEMENT OF PEDIATRIC DIAPHYSEAL FRACTURES WITH
CLOSED FLEXIBLE/ELASTIC INTRAMEDULLARY NAILING
– A PROSPECTIVE STUDY OF 50 CASES**

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INTRODUCTION/AIM: Pediatric Diaphyseal fractures are a common emergency in the Accident / Emergency department. Different modalities of treatment ranges from – 1) Closed Reduction and Casting 2) Open reduction & Plating osteosynthesis 3) External fixator Study of Closed Diaphyseal Fractures with Flexible Intramedullary Nailing in children (6 -16 years) with mean age of 9years. **METHOD/RESULT:** The study included 40 males and 10 females with 15 Tibia Diaphyseal fractures, 8 Radius-Ulna fractures and 25 Femur Diaphyseal fractures & 2 Humerus Diaphyseal fractures. Results were good as Fractures united - Clinically at mean time of 10 weeks, Radiologically at mean time 20 weeks Nails were removed after mean time of 24 weeks With minimal postoperative complication, no angular deformation or limb length discrepancy. **RECOMMENDATION/CONCLUSION:** Treatment was Biological Fixation with minimal complications. It had psychological, social, educational & economic advantages over the conventional conservative treatment.

Abstract no.: 28660

ANTERIOR DISLOCATION PURE OF THE HIP: A REPORT OF 2 CASES

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Introduction: The pure anterior dislocation of the hip in its obturating variety is exceptional. It always translates a traumatism of high energy and can compromise the functional forecast of the hip by necroses secondary femoral head. **Material and methods:** One reports the observation of two patients who, following an accident of the public highway, presented a pure obturator dislocation of the hip. **Results:** Dislocation was reduced in urgency under general anaesthesia. In post-reduction the hip was stable, an articular discharge was recommended during 6 weeks then rehabilitation. After a 2 year retreat one did not note of sign of necroses femoral head and there is no gene functional. **Conclusion:** In the light of these observations and the review of the literature, we discuss mechanizes it, the diagnosis and the treatment of this rare lesion.

Abstract no.: 28665

**MANAGEMENT OF OPEN FRACTURE OF LOWER LIMB – HOW MUCH IS
BOA (BRITISH ORTHOPEDIC ASSOCIATION) / BAPRAS (BRITISH
ASSOCIATION OF PLASTIC AESTHETIC AND RECONSTRUCTIVE
SURGERY) GUIDELINE BEING FOLLOWED**

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Introduction: An average DGH in UK serving a population of 250,000 will treat about 60 cases of tibia fracture of which 25% will be open fractures. BOA/BAPRAS guideline for management of open fracture of lower limb was published on 15 September 2009. **Aim of study:** One year after its publication we looked into our practice in the DGH in light with the guidelines **Method and material:** We looked into the case notes of all the patients with open fracture of lower limb who were admitted in our orthopedic department with special reference to primary management in A&E including wound handling, photograph, x-rays, type of antibiotic and time of antibiotic, tetanus prophylaxis, and timing of surgery. **Result:** Our study suggested that in certain aspects of management we are following the guidelines but in others there we are not adhering to this. As far as timing of surgery is concerned we are following the guidelines and operating patients in normal working hours unless there is specific indication. How ever we are not following the guideline as far as wound management in A&E is concerned. We were also using various antibiotics. We were completely ignoring the antibiotic use to cover gram negative organisms at the start of initial debridement. **Conclusion:** Our study is to raise awareness about the current guideline on management of open fracture of lower limb among orthopedic colleague. We would also like to emphasize that there is significant scope for improvement as far as management of open fracture of lower limb is concerned.

Abstract no.: 28666

ISOLATED, TRAUMATIC POSTERIOR DISLOCATION OF THE RADIAL HEAD IN AN ADULT: A NEW CASE TREATED CONSERVATIVELY

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In adults, isolated radial head dislocation is extremely rare injury; it's restricted to children or adolescent. A 26-year-old male reported to the emergency department for complaints of pain and restricted range of motion in the right elbow following a fall off a motorcycle. The elbow was held in flexion and partial supination. The radial head was palpable posteriorly. Radiographs showed a posterior dislocation of the radial head. No abnormality of the ulna was noted. Under general anesthesia, gentle traction, pronation and direct pressure over the radial head were used to reduce the dislocation. Post reduction, the elbow was found to be stable. Immobilization was done in a long-arm cast for 4 weeks. At final follow-up, the patient had recovered complete range of motion. Isolated dislocation of the radial head without concomitant ulnar fracture or humeroulnar subluxation in adults is a rare injury. Most cases appear to be in children. Heidt and Sterne in 1982 were the first to describe this injury. Only 22 cases have been reported in adults in the literature. It has been predominantly posterior. The mechanism leading to an isolated radial dislocation has been variously described. The proximal radio-ulnar joint is most stable in supination. Typical clinical presentation is maintenance of flexion and extension following the injury, but complete loss of pronation and supination. In the literature, fifteen cases were treated conservatively with no recurrence. If diagnosed at time, acute cases can be reduced by an easy external manipulation and the functional outcome seems to be good post reduction. If missed or neglected, an open reduction must be done with either an annular ligament reconstruction or a radial head excision. Early reduction is important in order to avoid the necessity for excision of the head of radius and its attendant complications.

Abstract no.: 28669

ANTIBIOTIC PROPHYLAXIS FOR TRAUMA PATIENTS REQUIRING OPERATIVE INTERVENTION

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Introduction: All trauma and orthopaedic departments have protocols to direct the appropriate antibiotic prophylaxis for trauma patients. Those requiring operative intervention involving the insertion of foreign material are deemed to require antibiotics regardless of whether the original insult has resulted in a closed injury. Infection leads to significant morbidity and consumption of healthcare resources. **Methods:** The patient population prospectively identified consisted of 108 patients admitted between September and November 2010 to a tertiary trauma centre in Newcastle-upon-Tyne. These patients underwent surgical management of a closed fracture with insertion of foreign material in the absence of an open wound. Notes, anaesthetic and drug charts were scrutinised within 24 hours of the procedure in order to identify appropriate and timely use of standard antibiotic prophylaxis regime as directed by trust guidelines. Antibiotic guidelines at other trusts were compared to our own. **Results:** 98.15% received appropriate antibiotics according to trust protocol. There is strong agreement that antibiotic prophylaxis for the operative management of closed fractures provides significant benefits. What is unclear is the best practice for choice of antibiotics. There is contradiction at local, national and international level. **Conclusions:** This audit demonstrates that an excellent level of appropriate treatment according to trust antibiotic prophylaxis has been achieved. What is unclear is the origin of these guidelines and the evidence based approach in their design. Further work is required into the best choice of antibiotic prophylaxis for this type of surgery including spectrum of activity, pharmacological profile, hypersensitivity reaction and economic considerations.

Abstract no.: 28671

OUTCOME OF PAEDIATRIC FOREARM FRACTURES

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Aim: To investigate the various methods of surgical management and outcomes for children with diaphyseal forearm fractures. Method and Results: Children aged 8-16 who suffered a diaphyseal fracture of the forearm that required operative intervention (MUA, IM nailing, ORIF) over a two-year period were included. The presenting deformity of the fracture was measured, as was the post operative and follow up deformity. Any further operative interventions were noted. 36 patients underwent operative intervention. 24 (67%) underwent MUA and cast, 12 (33%) had operative fixation with the insertion of metalwork. 6 of these procedures were open reduction with plate and screws, 6 were IM nails. Of the patients treated with MUA and cast, the post operative angulation was measured. The range was 0 – 11.1 degrees with a mean of 4.0 degrees. At follow up the range was 0 – 14.5 degrees, with a mean of 6.2 degrees. The cast index of these patients was recorded. The children who underwent IM nail or ORIF had a post operative angulation with a range of 0 – 3.8 degrees and a mean of 0.93 degrees. At follow up the range was 0 – 2.8 degrees and the mean was 0.84 degrees. Of the 24 patients who underwent MUA and cast, 3 patients went on to mal-union requiring further intervention. Conclusion: In our unit, MUA and application of plaster had good results with only 3 patients requiring reoperation. IM nailing or ORIF have excellent results with regard to position and union but have associated surgical risks.

Abstract no.: 28672

**FORMATION OF THE PROXIMAL PART OF THE FEMUR AFTER
POSTERIOR ROTATIONAL HIP OSTEOTOMY AT TREATMENT OF THE II
TYPE KALAMCHI DEFORMITES**

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We analyzed the results of treatment of 12 patients with II type Kalamchi deformation. The age of patients by the time of performing of posterior rotational hip osteotomy was 5-8 years. The purpose of this operation is moving of a plane of developing deformation from frontal to the horizontal. The mean follow-up is about 7 years. The analysis of roentgenograms and 3D-KT have shown that gradual displacement of the femoral head to backward after operation occurs slowly and practically does not affect on function of a hip joint. In the frontal plane the femoral head develops normally without a tendency to formation of an external subluxation if there is the absence of accompanying acetabular dysplasia. We used classification Severin with addition Zions and MacEwen for an estimation of outcomes of treatment. The clinical estimation was based on system McKay. Outcomes at 7 are estimated as good, at 3 as satisfactory, at 2 as bad.

Abstract no.: 28674

EVALUATION OF PLANTAR FASCIA STRETCHING EXERCISES IN PATIENTS WITH CHRONIC PLANTAR FASCIITIS

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Background: chronic idiopathic heel pain is one of the common ailments in an orthopaedic outpatient department. Shoe inserts (cups and pads), non steroidal anti inflammatory agents, contrast therapy and local injections are the commonly prescribed treatment modalities. We evaluated the efficacy of plantar fascia stretching exercises as a treatment modality for this condition. **Methods:** 40 Patients presenting with chronic heel pain (> 6 weeks) were taught plantar fascia stretching exercises and instructed to perform the exercises in cycles of ten and a minimum of three cycles per day. Patients were considered compliant if they performed exercise for a minimum of two cycles/day and 5days/week. No foot wear modification or activity restriction was advised. Patients were instructed to take Aceclofenac 100 mg single dose when they experienced unbearable pain and to maintain record of same. Patients' were evaluated weekly for 12 weeks. Foot Function index (FFI) pain subscale was administered at the initial visit and at final evaluation (twelve weeks). Analgesic diary was reviewed at every visit **Results:** 28 (19 F, 11 M) patients were compliant with the regime and were available for evaluation at twelve weeks after institution of this treatment. FFI pain subscale scores improved from 30.71 points (range 25-38) to 5.68 points (range 0-18) at 12 weeks final evaluation ($p<0.0001$). The analgesic consumption was on an average less than 2 episodes/week at final evaluation as compared to an average of 12 episodes/ week. 26 Patients (93 %) were satisfied with the regimen and 7 patients (25 %) had complete pain relief with stretch regimen. **Conclusions:** Plantar fascia stretching exercises should be one of the key components and first line option in the management of patients with plantar fasciitis. Benefits include a marked decrease in pain and functional limitations and a high satisfaction rate.

Abstract no.: 28675

USING OF THE TRIPLE PELVIC OSTEOTOMY IN TREATMENT OF THE II TYPE KALAMCHI DEFORMITIES IN CHILDREN

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The II type Kalamchi deformities after avascular necrosis of the femoral head is the most difficult for operative correction. We performed the triple pelvic osteotomy in 20 cases with unsatisfactory development of acetabulum for creation of "a stability stock» in a hip joint. The mean follow-up is about 8 years. For assessment of outcome we used the classification of Severin with addition Zions and MacEwen. Clinical evaluation at the latest follow-up included leg length discrepancies, range of motion, and McKay system. 4 hips had an excellent result, 12 a good result and 4 a fair result. The mean Viberg angle increased from 14° to 32°. The mean leg length discrepancy is 0,8 sm. 2 patients still had lameness after operative treatment. Using of the triple pelvic osteotomy is justified at treatment of the II type deformities according Kalamchi after avascular necrosis of the femoral head in children. Advantages of operation are improvement of femoral head covering, increase of stability and possibility further remodeling of hip joint.

Abstract no.: 28679

ICHTHYOTHERAPY: IS IT ALL EXOTIC AS IT SOUNDS?

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Fish therapy or Ichthyotherapy is a relaxing way of removing dead skin from the feet as tiny fish gently nibble away the dead skin, leaving feet revitalised. It is a popular exotic therapy, but also has been used to treat skin conditions like psoriasis. Though it could be a relaxing experience, it may have potential risks. We report a case of abscess in the foot following fish therapy. A 21-years-old sales person presented with history of pain and swelling of the left foot following fish therapy in Thailand. He had a scab of the left 3rd toe following an injury 4 weeks ago and tried fish therapy to remove the scab and dead skin. The pain and swelling progressively got worse and reported to his General Practitioner. He had persistent symptoms in spite of oral antibiotics. Clinically he was afebrile, with a discharging superficial wound over the 3rd toe, erythema and swelling of the dorsum of foot, and abscess in the first web space. There was no evidence of compartment syndrome or neurovascular deficit. He underwent drainage of abscess with washout and debridement of the wound over the 3rd toe. He improved with antibiotics and the wounds were healing with regular dressings. With more new fish therapy spas opening, it is possible that we may see an increasing number of patients with related hazards. The question: Are people warned of the potential risks?

Abstract no.: 28680

HIP ARTHROSCOPY: PERIPHERAL COMPARTMENT FIRST

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Hip arthroscopy has become the new standard for managing early hip disease including femoroacetabular impingent, loose bodies, ligamentum teres tears, and chondral injuries. The classic described method is starting with arthroscopy of the central compartment followed by the peripheral compartment. We describe the method by peripheral compartment first which allows easier visualization, offers less traction time and gives access to the central compartment under direct vision.

Abstract no.: 28685

THE MINI-OPEN PINNING FOR TRANSVERSE FRACTURES OF THE PATELLA

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The fractures of the patella are articular fractures which impose an anatomical reduction, the pinning is the means more used in the assumption of responsibility of these fractures. We report the study of 08 patients operated for transverse fractures of the patella by percutaneous pinning with very good results. The mini-open surgery was introduced since 1984 for the fractures of the patella that is hooping or screwing under arthroscopy, the pinning percutaneous can belong to these techniques of mini open for the even moved transverse fractures of the patella. Compared to the other techniques the percutaneous pinning makes it possible to profit from the advantages of the mini-open surgery and the mechanical properties of the pinning.

Abstract no.: 28691

TRANSIENT SYNOVITIS VS SEPTIC ARTHRITIS: ULTRASOUND GUIDED CLINICAL PREDICTION ALGORITHM

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Establishing the diagnosis in a child presenting with an atraumatic limp can be a daunting task. While Transient synovitis is self limiting condition with low potential for long term harm Septic arthritis is a serious entity with potential for severe complications. We produce a prediction algorithm to determine the significance of CRP in distinguishing between TS and SA on the basis of ultrasound findings. Method: All children with a presentation of 'atraumatic limp' and a proven effusion on hip ultrasound between 2004 and 2009 were included. Patient demographics, details of the clinical presentation and laboratory investigations were documented to identify a response to each of the four variables (Weight bearing status, WCC >12,000 cells/m3, CRP >20mg/L and Temperature >38.5°C). SA was defined based upon culture and microscopy of the operative findings. Results: All the patients included were positive for effusion on Ultrasound examination of the hip. Patients with no effusion never developed septic arthritis of hip. 311 hips were included within the study. Of these 282 were considered to have transient synovitis. 29 patients met criteria to be classified as SA based upon laboratory assessment of the synovial fluid. A clinical prediction model consisting of variables (CRP and weight bearing status) was 75.9%, sensitive and 96.8% specific of septic arthritis. Conclusions: Our results, we believe are the most inclusive as evidence of effusion is determined by hip ultrasound as part of a defined protocol. The SA: TS ratio of 0.1 within our study appears broadly to represent what we see within our tertiary level unit. Ultrasound examination of the hip is an effective method of initial investigation for a child presenting with atraumatic new onset limp.

Abstract no.: 28693

REVIEW OF DIGITAL TEMPLATING IN TOTAL HIP ARTHROPLASTY

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Background: The digital evolution in diagnostic imaging requires the replacement of conventional preoperative acetate templating by digital templating in total hip arthroplasty (THA). The purpose of this study was to assess the accuracy of digital templating (using OrthoView Software). **Materials and Methods:** We retrospectively evaluated 2 groups of patients undergoing Cemented Exeter THA by 2 Consultant Surgeons. The first group consisted of 146 consecutive patients undergoing an operation between 2004 and 2005, all having their templating done off hard copy films using acetates. The second group consisted of 222 consecutive patients undergoing surgery between 2008 and 2009, all digitally templated. The templated acetabular cup size, femoral offset and component size were evaluated against the implants actually used. **Results:** There was no significant difference in the cup and stem sizes used before and after the introduction of digital templating by each consultant ($p>0.01$). Though the consultants did tend to favor slightly different sizes both before and after the introduction of digital templating, OrthoView was accurately predicted the cup size in 72% of cases, the stem offset in 82% and the stem size in 62% of cases. There was no significant difference between the leg length discrepancy and cup angle between the two Consultants before and after the introduction of OrthoView Software. **Conclusions:** OrthoView Software is a convenient technique for the preoperative planning for THA patients and was as accurate as previous acetate templating. It was particularly accurate in predicting the stem offset, which is the most difficult variable to assess perioperatively.

Abstract no.: 28694

SECONDARY PREVENTION OF OSTEOPOROTIC FRAGILITY FRACTURE IN WOMEN AGED 75 YEARS AND ABOVE – ARE WE FOLLOWING NICE (NATIONAL INSTITUTE OF CLINICAL EXCELLENCE - U.K) GUIDELINES?

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Osteoporotic fractures are becoming a major cause of morbidity and mortality across the world. In the UK, over 3 million people suffer from osteoporosis. The problems is likely to worsen in western world as the population over 60 years of age is predicted to increase by 50% and over 90 years is predicted to double in the coming 40 years Patients who sustain an osteoporotic fracture are at increased risk of sustaining further osteoporotic fracture. Women who develop vertebral fracture have a 19.2% risk of further vertebral fracture within the first year of the fracture if untreated. Orthopaedic surgeons are often the first and only physician to see these fracture patients; hence, they have an important role in the secondary prevention of fragility fractures. NICE recommends bisphosphonates as treatment option for the secondary prevention of osteoporotic fragility fracture in women aged 75 yrs and older without the need for prior dual energy x-ray absorptiometry (DEXA) Scanning. This guidance assumes that women who receive treatment have an adequate calcium intake and are vitamin D replete. Unless clinicians are confident that women who receive treatment meet these criteria, calcium and/or vitaminD supplementation should be considered. I looked into case notes, drug charts and discharge summaries of female patients aged 75 and above admitted with hip fractures to see whether we are providing adequate secondary prevention to these extremely vulnerable population of the society or not. The results suggested that unfortunately we are not providing adequate secondary prevention against fragility fracture as recommended by NICE. The aim of this study is to create awareness among the junior doctors of the NICE guidelines for secondary prevention of osteoporotic fracture. We would also like to emphasize that there is significant scope for improvement as far as secondary prevention of fragility fracture is concerned.

Abstract no.: 28696

TOTAL KNEE REPLACEMENT IN PATIENT WITH SEVERE IDIOPATHIC THROMBOCYTOPENIC PURPURA: SIGNIFICANCE OF PERIOPERATIVE MANAGEMENT

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Background: Idiopathic Thrombocytopenic Purpura (ITP) is considered to be an autoimmune disorder with low platelet count. There have been major advances in the treatment of ITP. Specific guidelines for the perioperative management of patients with ITP undergoing major joint replacement surgery are still unclear. There have been case reports on Hip replacement surgery in patients with ITP but no case of knee replacement surgery in patients with ITP has been published. **Case report:** We present a case report on a 61 year old gentleman suffering from a severe form of refractory ITP with the platelet count of as low as 25×10^9 . A cemented total knee replacement was carried out in this case after extensive discussion, communication and co-ordination between the orthopaedic surgeon, haematologist and the anaesthetist. The platelet count was adequately optimised pre-operatively by intravenous immunoglobulin. Post- operatively a close watch was kept on his platelet count. The progressive fall of the platelet count was detected in early post-operative period. The patient has to be transfused intravenous immunoglobulins on an urgent basis. This prevented catastrophic bleeding into the joint. The patient was complication free at an early follow up of 3 months. **Conclusion:** We recommend major orthopaedic surgery such as total knee arthroplasty in patients with severe unresponsive ITP can be successful in spite of the risks of perioperative bleeding and infection, as long as they receive with appropriate perioperative management which involves a multi-disciplinary team approach.

Abstract no.: 28698

A PROSPECTIVE, RANDOMIZED COMPARISON BETWEEN MODIFIED BROSTROM PROCEDURE USING SINGLE AND DOUBLE SUTURE ANCHOR FOR CHRONIC LATERAL ANKLE INSTABILITY

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Introduction: This study was performed prospectively and randomly to compare clinical outcomes of modified-Brostrom procedure using single and double suture anchor for chronic lateral ankle instability. **Material & Methods:** Forty patients were followed up for more than 2 years after modified-Brostrom procedure for chronic lateral ankle instability. Twenty modified-Brostrom procedures with single suture anchor and 20 procedures with double suture anchor randomly assigned were performed by one surgeon. The mean age was 30.6 years, and the mean follow-up period was 2.6 years. The clinical evaluation was performed according to the Karlsson scale and Sefton grading system. The measurement of talar tilt angle and anterior talar translation was performed through anterior and varus stress radiographs. **Results:** At the last follow-up, the Karlsson scale had improved significantly from preoperative average 45.4 points to 90.5 points in single suture anchor group, from 46.2 points to 91.3 points in double suture anchor group. There were 8 excellent, 10 good, and 2 fair results according to the Sefton grading system in single anchor group, and 9 excellent, 8 good, 3 fair results in double anchor group. Therefore, 18 cases (90%) in single anchor group and 17 cases (85%) in double anchor group achieved satisfactory results. Talar tilt angle had improved significantly from preoperative average 15.7° to 6.1° in single anchor group, from 16.8° to 4.2° in double anchor group. There was significant difference in postoperative talar tilt angle between single and double anchor group. **Conclusion:** Significant differences in clinical and functional outcomes were not found between single and double suture anchor technique. On stress radiographs for evaluation of mechanical stability, modified-Brostrom procedure using double suture anchor was superior to single anchor technique.

Abstract no.: 28701

THE DIAGNOSTIC USEFULNESS OF STRESS RADIOGRAPHY IN CHRONIC LATERAL ANKLE INSTABILITY

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Introduction: Ankle stress radiograph is commonly used for evaluation of mechanical instability of the ankle joint. But, there are controversies regarding the value of this test in chronic lateral ankle instability. This study was performed to evaluate the diagnostic usefulness and validity of ankle stress radiograph. **Material & Methods:** Among patients undergoing the modified-Brostrom procedure, 42 cases with complete rupture of anterior talofibular ligament were enrolled in this study. Sixty normal Korean adults (120 cases) were recruited as the control group. Radiologic measurement of talar tilt and anterior talar translation was performed through anterior and varus stress radiographs using Telos device. The measurement was repeated three times by two researchers. We obtained the normal range of talar tilt angle and anterior talar translation in Korean adults, and used as a standard value for judgment of mechanical instability. We analyzed the sensitivity, specificity, positive and negative prediction value of ankle stress radiograph. **Results:** On ankle stress radiograph in Korean adults, normal range of talar tilt angle was below 8.3°, normal range of anterior talar translation was below 7.6mm. Talar tilt angle on varus stress radiograph showed 57% of sensitivity, 97% of specificity, 89% of positive and 86% of negative prediction value. Anterior talar translation on anterior drawer stress radiograph showed 69% of sensitivity, 97% of specificity, 91% of positive and 90% of negative prediction value. **Conclusion:** Ankle stress radiograph had good specificity, positive and negative prediction value for evaluation of mechanical instability in chronic lateral ankle instability. But, the sensitivity was less useful. For both anterior and varus stress radiographs, the positive prediction value was higher than the negative prediction value, which means ankle stress radiographs underestimated the mechanical instability. It must be remembered that normal stress radiograph does not exclude ankle instability.

Abstract no.: 28702

CONCOMITANT FRACTURE OF LATERAL PROCESS OF TALUS AND SUSTENTACULUM TALI OF CALCANEUS

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Fracture of the lateral process of talus known as snowboard injury is relatively uncommon, and various injury mechanisms have been reported. The sustentaculum tali of calcaneus is a stable structure supported by various medial ligaments of the ankle joint, therefore isolated fracture of sustentaculum tali is very rare and commonly misdiagnosed as the ankle sprain. Both fractures mostly involve the subtalar joint and so if appropriate treatment is not performed, chronic ankle pain can be lead by complications such as subtalar arthritis or nonunion. Concomitant fracture of lateral process of the talus and sustentaculum tali of the calcaneus were diagnosed on two male patients, who had ankle pain and swelling after traffic accident. The injury mechanism of both patients showing very similar pattern of fracture, was presumed to be a strong vertical compression force to the sustentaculum tali and a traction force to the lateral process. We performed the open reduction and internal fixation using headless compression screws, and achieved satisfactory clinical results.

Abstract no.: 28703

THE EFFECT OF BONE MORPHOGENIC PROTEIN-2 (BMP-2) COATED TRI-CALCIUM PHOSPHATE (TCP)/HYDROXYAPATITE (HA) ON NEW-BONE FORMATION IN A RAT MODEL OF FEMORAL DISTRACTION OSTEOGENESIS

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The purpose of this study is to evaluate the effect of single injection of bone morphogenic protein-2 (BMP-2), delivered by Tri-calcium phosphate (TCP) / Hydroxyapatite (HA), administered at osteotomy site, on the rate of new-bone formation during distraction osteogenesis in a rat model. Thirty-six male Sprague-Dawley rats, aged 12 weeks weighing a mean (and standard deviation) 401 ± 14 g were used in this study. The animals were randomized into three groups. Group I served as control, group II treated with only TCP/HA, and Group III was treated with rhBMP-2 coated TCP/HA. Materials were injected into the medullary canal at the femoral osteotomy site at the end of lengthening period. At two different time points, [Day 33] and [Day 61], evaluation was done with micro-CT, histology and real-time PCR. Radiographically, all Group III rat femurs exhibited bridging callus formation 8 weeks after the cessation of distraction. None of Group I rat femurs showed callus in the central zone of the distraction gap. In micro-CT, group III had greater value than in the control sides at all observation time points. In H&E stain, in group III at 4 weeks, much of the woven bone surrounded the particle with some fibrocartilagenous materials. At 8 weeks, woven bone covering the whole circumference of the particles was visible. Application of rhBMP-2, at the end of the rather rapid distraction period, as a single bolus, significantly increased the osteogenic process while the beta-TCP/HA behaved effectively as a sustained-delivery system for this osteoinductive protein.

Abstract no.: 28704

**ARTHROSCOPIC TREATMENT OF CHRONIC PATELLAR
TENDINOPATHY IN HIGH-LEVEL COMPETITION ATHLETES**

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Aim: To present the intra-operative details and the results of arthroscopic treatment of distal patellar tendinopathy in high-level competition athletes. Materials and Methods: Six athletes presented chronic patellar tendinopathy which did not respond to long term conservative treatment. All patients became unable to participate in their sports activities. Four patients were female and two patients were male. Three patients were volleyball players, two were soccer players, and one was a dancer, all competing in high level. Average age of the patients was 25 y.o. (20 to 31). Pre-operative radiographs indicated a protruded distal patellar pole with possible impingement pathology whereas magnetic resonance images demonstrated severe patellar tendinopathy at the most proximal part of the patellar tendon in all cases. All patients received an arthroscopic procedure with osteoplasty of the distal patellar pole, debridement of the degenerated areas of the visible posterior part of the patella and cauterization of the visible neo-vessels. Hoffa fat pad was partially removed in order to visualize the diseased part of the patellar tendon. No ultrasound guided technique was used to locate the affected patellar tendon. Mean duration of follow-up was 1.6 years (10 months to 2 years). Results: Patients showed a significant improvement in the Lysholm score from 51.3 +/- 12.0 to 94.8 +/- 3.9 on tenth post-operative week. All patients had returned to their sports activities by the twelfth postoperative week. At the end of the follow-up four of the patients were satisfied that they were able to compete at their former competing level. Conclusions: Arthroscopic treatment of chronic patellar tendinopathy is a minimal invasive and safe technique which produced satisfactory results equal to results previously reported with open methods. Ultrasound guided techniques did not seem to be necessary.

Abstract no.: 28706

**RESTORATION OF LIMB DEFORMITIES IN PEDIATRIC AGE GROUP BY
ILIZAROV TECHNIQUE: APPROACH TO BE MORE EFFECTIVE**

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This study is undertaken with the aim of evaluating the correction of limb deformities in children, based on Ilizarov's principle of distraction osteogenesis. Differing from adults, treatment of limb deformities in children differs in approach as mostly it's dynamic in nature: especially when around the epiphysis; late presenting; associated with gross limb length discrepancies; paucity of bone graft sources etc. hence it's a challenge to achieve satisfactory functions. The study is conducted between 1992 and 2010, and includes children below the age of 18 years who have undergone corrections for limb deformities arising out of posttrauma, congenital diseases, limb deficiencies, post infection etc. Total of 82 children are evaluated. The final evaluation is in terms of correction /union obtained, functions achieved and satisfaction gained by children/Parents. The Ilizarov ring fixator is a single solution to correction of multiple deformities of limb including shortening, angulations and rotations, as well as addressing problems of union where ever required. At times shortening is more than 60% of limb length. Additionally these problems are magnified as they are dynamic in nature. During our study we have found that to gain predictable results with Ilizarov technique, certain strategies/approaches are more meaningful. This study discusses these approaches towards correction of deformities.

Abstract no.: 28708

FUNCTIONAL OUTCOMES AND COMPLICATIONS OF PROXIMAL FEMORAL NAILING FOR UNSTABLE TROCHANTERIC FRACTURES

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Functional outcomes and complications of proximal femoral nailing for unstable trochanteric fractures Purpose: Intramedullary devices are replacing the sliding hip screw for stabilization of unstable intertrochanteric fractures. However few studies are available evaluating outcome of such treatment. Hence we proposed to study the functional outcome and complications of proximal femoral nailing in unstable intertrochanteric and subtrochanteric fractures. Methods: Twenty consecutive unstable intertrochanteric and subtrochanteric fractures were recruited prospectively between 2007 and 2009. Patients with open fractures, comorbidities precluding anesthesia, comminution at entry point were excluded. Minimum follow-up was 2 years. Parker and Palmer mobility score, Barthel index and Salvati-Wilson hip score were used for functional assessment. Results: There were 12 males and 8 females; mean age was 53.7 years; 15 had simple fall, 5 sustained RTA. There were 12 intertrochanteric (8 Evans type I-committed, unstable variety, 4 Evans type II) and 8 subtrochanteric fractures. Fracture union occurred at mean 3.7months. There were no wound-related complications. Mean shortening was 1.1cm (range 0.5-2.5 cm). The mean TAD was 26.3 in postoperatively and increased to 28.4 at 1 year. The mean Parker and Palmer mobility score at 1 year was 8.1. Barthel index at 6 weeks was 70 and at 3 months it was 90. 8 patients had excellent and 12 had good functional results according to Salvati-Wilson scoring system. There were 3 major complications - One varus malalignment (1260°), one back out of lower cervical screw requiring removal at 18 months, one breakage of nail at upper distal locking slot at 10 months after fracture union. Conclusion: Proximal Femoral Nailing significantly improves function both during early postoperative period and at final follow-up. Functional outcome is usually good; however, the procedure is not without complications. Knowledge of these complications is required for early identification.

Abstract no.: 28709

**ENDOCHONDRAL BONE FORMATION WITH HUMAN FRACTURE
HEMATOMA-DERIVED CELLS IN VITRO**

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Introduction: The origins of cells which play key roles in the process of endochondral bone formation after fracture are unknown. Previously, we demonstrated that cells from hematomas collected from fracture sites contain progenitor cells with osteogenic and chondrogenic potential, indicating their critical role in the process of fracture healing. We hypothesized that one of the cell origins was fracture hematoma. We investigated whether human fracture hematoma-derived cells could differentiate into hypertrophic cells in vitro.

Methods: For chondrogenic differentiation, pellet cultures were performed for three-dimensional culture. The pellets were cultured for 5 weeks of chondrogenic induction (Ch) followed by 2 weeks of hypertrophic induction (Hp). **Results:** After 5-week Ch, pellets contained a dense matrix intensely for glycosaminoglycan and collagen-II. After Hp (7 weeks), pellets exhibited the typical hypertrophic morphology with large lacunae. The outer rim was stained by Alizarin red-S staining. The deposition of collagen-X was found diffusely. Expression of collagen-II was up-regulated after 5-week Ch, and then down-regulated by 2-week Hp. Expression of collagen-X, MMP-13, VEGF, Runx2 and Osterix were increased after 5-week Ch, and then significantly up-regulated by 2-week Hp. Expression of osteocalcin was up-regulated after 2-week Hp. **Discussion:** This is the first study demonstrating that hematoma-derived cells can differentiate into hypertrophic and calcifying chondrocytes in vitro. Our results suggested that fracture hematoma may be a source of cells that play an important role during endochondral bone formation.

Abstract no.: 28711

EFFECT OF LOW-INTENSITY PULSED ULTRASOUND ON BMP-7-INDUCED OSTEOGENIC DIFFERENTIATION OF HUMAN NONUNION TISSUE-DERIVED CELLS IN VITRO

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Introduction: It is well-recognized that bone morphogenetic protein-7 (BMP-7) and low-intensity pulsed ultrasound (LIPUS) accelerates healing of nonunion. Recently, we demonstrated that nonunion tissue-derived cells (NCs) contained progenitor cells with osteogenic/chondrogenic differentiation potential in vitro. We hypothesized that the combined application of BMP-7 and LIPUS would enhance osteogenic differentiation of NCs. We investigated whether LIPUS promoted BMP-7-induced osteogenic differentiation of NCs in vitro. **Methods:** Nonunion tissue was removed from the nonunion patients and NCs were isolated. Two experimental groups were studied: group 1: BMP-7 alone (osteogenic medium) group 2: BMP-7 (osteogenic medium) + LIPUS LIPUS was given through the bottom of the culture plates for 20 minutes for 21 days. Osteogenic differentiation was assessed by ALP activity, Real-Time PCR and Alizarin Red-S staining. **Results:** ALP activity and the gene expression of ALP and Runx2 in group 2 were significantly higher than group 1 at Day10 and 14. The intensity of Alizarin red S staining of NCs in group 2 was significantly higher than group 1 at day 21. **Discussion:** Our results showed for the first time that LIPUS promoted BMP-7-induced osteogenic differentiation of NCs. Our study indicated that the combination of LIPUS treatment and local application of BMP-7 at the nonunion site might accelerate the healing of nonunion by enhancing osteogenic activity of NCs in patients with nonunion.

Abstract no.: 28712

A RADIOGRAPHIC STUDY OF THE RELATIONSHIP BETWEEN JUMPER'S KNEE AND PATELLA ALTA

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BACKGROUND: There is a controversy whether patella alta is related to jumper's knee. **PURPOSE:** To investigate the relationship between jumper's knee and patella alta using a radiographic index. **METHODS:** Subjects comprised 54 jumper's knees of 43 patients (10-30 years old, average 15.6 years old). 167 control subjects were randomly selected from patients with knee contusions. 48 knees with epiphyseal closure of the tibial tuberosity were chosen from the control subjects as an age-matched control group. Radiographic evaluations were carried out to evaluate the patella alta using Insall-Salvati Index (ISI), Blackburne-Peel Index (BPI) and Caton-Deschamps Index (CDI), and the elongation of the patella using the Patella Morphology Ratio (PMR). **RESULTS:** All indices in the jumper's knee group were significantly higher than those of the control. In the control, significant inverse-correlations were observed between BPI, CDI and PMR and age. We examined the differences between both groups before and after epiphyseal closure. There was no significant difference in the ISI after closure between the jumper's knee group and the control; however, the BPI, CDI and PMR in the jumper's knee group after closure were significantly higher than the control. **CONCLUSIONS:** After epiphyseal closure, patients with jumper's knee are more likely to have patella alta and elongated patellae. In jumper's knee with patella alta, it is possible that ISI looks low due to the patellar elongation. In this event, we believe that patella height in jumper's knee should be evaluated with indices that are independent of the patellar shape.

Abstract no.: 28713

ANALYSIS OF THE DISTRIBUTION OF OSSIFICATION OF THE LIGAMENTUM FLAVUM USING WHOLE SPINE CT MYELOGRAPHY

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Ossification of the ligamentum flavum (OLF) has been recognized as a cause of myeloradiculopathy. OLF is relative common pathogenic condition in Japan. To date, there is no study that comprehensively assessed the distribution and prevalence of OLF in the whole spine in detail. The present study aimed to evaluate the prevalence, morphology, and distribution of OLF using CT myelography. From January 2007 to August 2010, 254 consecutive patients underwent whole spine CT myelography and patients with ossification of posterior longitudinal ligament were excluded and 223 patients (118 males and 105 females) were evaluated. Their mean age was 68.2 years (range, 22-87 years). OLF was identified in a total of 72 patients (32.3%). A total number of OLF identification was 149 segments. There were 1 segment at C5/6 level, 3 segments at C6/7 level, 2 segments at T1/2 level, 7 segments at T2/3 level, 8 segments at T3/4 level, 9 segments at T4/5 level, 7 segments at T5/6 level, 4 segments at T6/7 level, 4 segments at T7/8 level, 4 segments at T8/9 level, 23 segments at T9/10 level, 42 segments at T10/11 level, 31 segments at T11/12 level, 3 segments at T12/L1 level, 1 segment at L1/2 level. The most common site of involvement is the lower thoracic spine, but they can also occur in the upper thoracic spine. Before spine surgery, routine screening of whole spine should be performed for avoiding unexpected neurological deficits after surgery.

Abstract no.: 28714

**CONGENITAL DEFECTS OF THE POSTERIOR ARCH OF ATLAS AND
AXIS IN KLIPPEL-FEIL SYNDROME**

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Klippel-Feil syndrome (KFS) is characterized by complex congenital anomalies of segmentation of the cervical spine. In clinical orthopaedic fields, congenital fusion of two or more cervical vertebrae is defined as the feature of KFS. Congenital defects of the posterior arch are very rare anomalies and these anomalies are considered as a developmental failure of chondrogenesis and mostly benign anatomical variation. Although rare, acute neurological deficits have been associated with these anomalies and detection of them are very important. It was reported that the incidence of the posterior atlantal arch defect is 0.69% to 4%. In addition, the report associated with KFS is extremely scarce. We present a patient with very rare abnormalities of congenital defects of the posterior arch of atlas and axis associated with KFS. A six-year-old boy was brought to our institution for evaluation of torticollis and short neck. On the examination, although a short neck which was tilted to the left slightly and low hairline was found, cervical motion was not restricted. Sprengel deformity was not found. Neurological examination revealed no motor or sensory disturbance and abnormalities of deep tendon reflex. Radiographs of the cervical spine demonstrated the fusion of C2-6 vertebrae and the complete posterior arch defect of the atlas and axis and spina bifida occulta was also detected. Although atlantodens interval was 6mm, there was no evidence of atlantoaxial instability as assessed by flexion and extension views. Ultrasound scanning of abdomen and pelvis and echocardiography revealed no visceral anomalies.

Abstract no.: 28715

BONE REMODELING AROUND AN ANATOMICALLY DESIGNED FEMORAL COMPONENT IN CEMENTLESS TOTAL HIP ARTHROPLASTY

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We evaluated the bone remodeling around an anatomically designed femoral component inserted without cement at more than ten years after total hip arthroplasty. Sixty-nine total hip arthroplasties were performed using Anatomic Fiber Metal plus femoral component (Zimmer, USA) with circumferential proximal fiber-mesh coating. The hemispheric acetabular component (Harris-Galante II for 25 hips, Trilogy for 44 hips) was implanted without cement. The liner was made of conventional polyethylene. Fifty-one hips in 49 patients were followed for a mean of 13 years (range, 10 to 16 years) and entered into the study. The mean age of the study group was 62 (range, 36 to 79) years old. No femoral component was revised for any reason in the entire cohort of 69 hips. Six acetabular components including three stable ones were revised. Thigh pain was not found in the study group at the latest follow-up. All femoral components showed bone ingrown fixation on radiographs. Radiolucent line less than 1 mm was present in zone 4 in 44 hips. Osteolysis was found in zone 1 in one hip, and in the medial side of the greater trochanter in 16 hips, but not found in any of the distal zones. Spot welds were present in zone 6 in 37 hips (73%). The anatomically designed femoral component provided good bone ingrowth fixation and prevented the distal osteolysis, but the high rate of spot welds at zone 6 suggested that the load transmission was focused on the medial side of the femur.

Abstract no.: 28716

**RESTORATION OF POSTTRAUMATIC DEFECTS OF LONG BONES
COMPLICATED BY PURULENT INFECTION**

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Research objective is to improve the surgical replacement of posttraumatic defects of long bones complicated by purulent infection. Methods: The work is based on the results of treating 25 patients with posttraumatic defects of long bones complicated by purulent infection treated at the Department of Purulent Traumatology of the Research Institute of Traumatology and Orthopedics from 2008 to 2009. There were 18 men and 7 women. Age ranged from 19 to 54 years. Pathological process is localized in the femur in 8 cases, shin -- in 12, shoulder - in 2, forearm - in 3. Defects in localization are generalized as follows: metadiaphyseal in 13 cases, diaphyseal – in 9; epimetaphysis - in 3. Defects up to 3,0 cm were at 5 patients, up to 5,0 cm – at 8, up to 10,0 cm – at 12. Results: Radical resection of osteomyelitic focus using restoration of defects of long bones of limbs by Ilizarov frame was carried out in treatment of 25 patients: monolocal consecutive compression distraction osteosynthesis used at 5 patients, bilocal consecutive compression distraction – at 9, consecutive bilocal distraction compression at 11. Results have been studied from 6 months to 1,2 years. In all 25 cases reduction of osteomyelitic process and in 23 cases the full consolidation of bone fragments and regenerate reconstruction is observed after defect replacement. In 2 cases recovery of limb length to 80% is carried out. Conclusion: Using stable and controlled transosseous osteosynthesis in defects restoration of long bones complicated by purulent infection is alternative treatment method and allowed to recover the statics dynamical function of limbs of the affected limb in 92% of cases.

Abstract no.: 28720

THE FACTORS WHICH INFLUENCE THE RESULT OF VARUS DEROTATIONAL OSTEOTOMY OF THE PROXIMAL FEMUR IN DEVELOPMENTAL DYSPLASIA OF THE HIP

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Varus derotational osteotomy (VDO) is commonly used to correct the deformity of the proximal femur in developmental dysplasia of the hip (DDH). The results of this procedure, however, are not always consistent due to postoperative remodeling of the femoral neck and poor acetabular development. As a result, some authors suggest acetabuloplasty for subluxated and dysplastic hips. The purpose of this study was to evaluate the factors that affected the results of VDO. We retrospectively analyzed 55 hips with DDH in 52 patients [M:F=3:49, 31.3±11.1months (15~63)], who were being treated with VDO from January 1990 to January 2003. Group A (32 hips) was treated with VDO alone until the last follow-up. Group B (23 hips) was treated with VDO and afterwards, an additional treatment of acetabuloplasty was performed. Average follow-up was 9.8 years (6~17.9 years). Evaluation was done according to the patients' age of diagnosis, their subsequent treatment with VDO, and their radiographic parameters [acetabular index (AI), neck shaft angle (NSA), medial joint space difference (MJD)]. There were statistical differences regarding the age of diagnosis ($p=0.002$), AI ($p=0.001$), and MJD ($p< 0.001$). Statistically, there were no differences regarding their age of operation ($p=0.067$), and NSA ($p=0.31$) between the two groups when analyzed. We found that there were significant differences between the two groups when comparing the age of diagnosis, AI, and MJD. VDO and acetabuloplasty were highly considered concomitantly when the patients' age of diagnosis and AI was higher. When VDO was performed, MJD should be less than 5mm.

Abstract no.: 28723

TWO STAGE EXCHANGE IN TOTAL HIP ARTHROPLASTY (THA) FOR INFECTION USING HIGH DOSE VANCOMYCIN IN CEMENT

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Two stage exchange THA is successful in treating infected THA but usually involves the addition to cement of high dose of tobramycin with its attendant risks of nephro or ototoxicity, therefore high dose vancomycin was used instead. Twenty hips were treated for an infected THA. At first stage revision THA, vancomycin 3gm was added to each 40gm packet of antibiotic bone cement containing tobramycin 1gm. Teicoplanin was used instead in one case. Transfemoral approach and a longstem routinely used at first stage. Postoperatively patients underwent 6 weeks IV antibiotics followed by 4 - 6 weeks of oral. A successful outcome was defined as prosthesis retention and no radiographic loosening or minimal pain. Maximum follow-up is 3 years. No patient was lost to follow-up. There was one death after first stage. Two hips continued with the first stage THA, and two had repeated first stage THA. Seventeen hips progressed to second stage revision, thirteen of which had femoral impaction grafting. There was one unrelated death after second stage. There was one superficial wound infection after first stage revision and one after second stage. All 16 second stage prostheses have been retained. There is one potential recurrence of deep joint infection as evidenced by hip pain. The addition of high dose vancomycin to tobramycin antibiotic cement at the first of two stage revision was successful in treating infected THA. The complication rate is within the range reported in the literature. Femoral impaction grafting at second stage was successful.

Abstract no.: 28724

SURGICAL TREATMENT FOR DIAPHYSEAL FRACTURES OF BOTH BONES OF FOREARM IN ADOLESCENTS

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Purpose: To evaluate the results of surgical treatment for diaphyseal fractures of both bones of forearm in adolescents. The ulnar fractures were fixed with a compression plate, and the radius with a Steinmann pin. Materials and Methods: Five adolescents with diaphyseal fractures in both bones of forearm were treated with a compression plate for the ulnar fracture and intramedullary fixation with a Steinmann pin for the radial fracture. They were clinically and radiologically evaluated retrospectively. Results: The mean time for radiological bone union was 9.2 weeks. At latest follow up, the rotational deformity and angulation were within seven degrees and evaluations of the functional results were excellent in all cases. But one patient experienced a refractured ulna after plate removal and the fracture was treated with a long-arm cast without any permanent complications. Conclusion: The use of a compression plate for the ulnar fracture and intramedullary fixation with a Steinmann pin for the radial fracture can be an effective method for unstable displaced diaphyseal fractures in both bones of forearm in adolescents.

Abstract no.: 28727

**EXPERIENCE IN APPLIANCE OF THE ACETABULAR COMPONENTS
“MATHYS RM” AND “KAZNIITO” IN THE COURSE OF HIP
ENDOPROTHESIS REPLACEMENT AT DYSPLASTIC COXARTHROSIS**

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At the Research Institute of Traumatology and Orthopedics of Kazakhstan the acetabular components «Mathys RM classic» and «KazNIITO» have been used in hip endoprothesis replacement since June 2008. These acetabular components were also used in severe dysplasia of hip, when the implantation of standard halfcup acetabular component with cementless fixation in the truly acetabulum seemed unpromising. Previously in similar clinical situations in all cases we used reinforcing and antiprotrusional acetabular constructions or low-profile cup with cement retained restoration. Construction feature of the low-profile cup with cementless fixation «KazNIITO» is the presence the unsymmetrical arranged large and small «fins» in the form of combs having radial direction and triangular cross-section increasing from the poles to the equator. 3 large «fins» are located at 10, 12 and 2 hours of cup circle, 4 small «fins» are evenly spaced in the remaining sector of the circle. In 42 cases of hip arthroplasty at dysplasia II-III and IV types at 40 patients at the age from 23 to 61 years the acetabular component «Mathys RM classic» have been used from June 2008 to June 2010. During the same period the acetabular component «KazNIITO» was used in 26 cases of hip arthroplasty at the dysplasia II-III and IV types at 26 patients from 29 to 57 years. The results of treatment were followed during the period from 6 months to 2.5 years after surgery, complications and poor results were not found out.

Abstract no.: 28729

FACTORS AFFECTING POLYETHYLENE WEAR AND OSTEOLYSIS IN CEMENTLESS TOTAL HIP ARTHROPLASTY

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Purpose: We investigated the factors affecting on the polyethylene (PE) wear in cementless THA. **Methods:** 41patients who underwent cementless THA (43 hips) were successfully followed more than 10 years post surgery. The diagnosis was osteoarthritis (35hips) and avascular necrosis of the femoral head (4hips). The average age at surgery was 57.9 years old, and the average follow-up period was 11.1 years. The acetabular cup we used was the Mallory Head finned porous cup (RingLoc) and PE was ArCom. The femoral stem was Bi-metric stem made of titanium. We used two types of femoral head: CoCr (22 hips) and Zirconia (21 hips). All femoral head were 28mm in diameter. We measured PE wear on X-ray: average annual liner wear, total liner wear and studied correlation between the PE wear rate on X-ray and following factors in the patients: age, weights, gender, BMI, PE thickness, setting angle and position of components, lever-arm ratio, and osteolysis. **Results:** There was no correlation between PE wear and each clinical parameter. There was a significant difference in average annual liner wear between osteolysis group (a.v.0.09 mm) and non-osteolysis group (a.v.0.06mm). The liner wear rate in osteolysis group was higher than that in non-osteolysis group (p-value 0.028). **Conclusions:** There is no significant correlation between various clinical factors and PE wear in the RingLoc / ArCom. We suggest that better clinical outcome can be expected with improvement of locking mechanism and increase of PE wear resistance.

Abstract no.: 28734

ANALYSIS OF JOINT SPACE WIDTH IN OSTEOARTHRITIC AND NORMAL HIPS BY USING THREE-DIMENSIONAL COMPUTED TOMOGRAPHY

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Introduction: The main radiographic findings of osteoarthritis are narrowing of the joint space, sclerosis of the subchondral bone, and osteophytes and bone cyst formation. Joint space narrowing in the hip increases with the progression of osteoarthritis. This study aims to assess the joint space width depicted on sagittal three-dimensional computed tomography (3D-CT) image. **Method:** We collected data on 208 osteoarthritic hips and 47 normal hips by using computer tomography (CT) scans and plain radiographs. We excluded subluxed hips and hips with marked osteoarthritic changes because the cause of these changes was unclear. We used 3D-CT to measure the width of the joint space at 3 points (anterior, apex, and posterior in the sagittal plane) and determined the osteoarthritic stage in these hips by using plain radiographs. **Result:** Of the 208 hips examined, 69 were assigned to the prearthritic group, 53 to the early/advanced OA group, and 86 to the terminal OA group. Further, 25 hips showed dominantly anterior joint space narrowing, while 5 hips showed dominantly posterior joint space narrowing in the prearthritic and early/advanced OA groups. We identified remarkable narrowing or obliteration of the entire joint space in the terminal OA group. **Conclusion:** Joint space narrowing started in the anterior and apical regions and gradually progressed to involve the entire joint as osteoarthritis worsened. In a few cases, joint space narrowing was observed mainly in the posterior aspect.

Abstract no.: 28738

IMPACTION BONE GRAFTING OF OSTEOPOROTIC TIBIAL PLATEAU FRACTURES

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Internal fixation of osteoporotic tibial plateau fractures is associated with failure and restrictions in mobility, while primary TKA often require stemmed and constrained implants. We propose that impaction bone grafting improves the internal fixation of these fractures and allows immediate patient mobilization. Five patients aged 54-64, were treated surgically for an osteoporotic tibial plateau fracture. The patients T scores ranged between -2.1 and -2.4. There were four Schatzker II fractures and one Schatzker III fracture. The impaction bone grafting was performed using irradiated bone allograft coarsely milled. Postoperatively all patients were mobilized as tolerated. Clinical, radiological (including RSA), and patient reported outcomes were assessed up to three years. All patients progressed to full weight bearing. Three of five fractures healed without loss of fracture reduction as measured by RSA. In the remaining two patients the fracture collapsed. One of these patients was revised to a standard primary TKA. The second patient continues to mobilize unaided and is satisfied with the result. In both of these cases the proximal tibial defect was not fully contained by the reduction of the tibial cortex and the internal fixation used to stabilize the fracture. Impaction bone grafting shows promising results as an adjuvant to internal fixation of osteoporotic tibial plateau fractures. All cases with contained defects healed uneventfully. In the case revised to TKA there was no need for the stem, augment and possibly constrained implant required if this was the initial surgical treatment.

Abstract no.: 28739

PREVALENCE OF SCOLIOSIS IN KAZAKHSTAN

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The research of statistical data was carried out in order to determine the prevalence of scoliosis in the Republic of Kazakhstan and compare the established prevalence of scoliosis in Kazakhstan with the literary data. Determining the prevalence of scoliosis is necessary for an adequate organization and planning, treatment and prevention activities and their insuring. The average annual prevalence of scoliosis have been observed $265,0 \pm 13,30/0000$ (95% CI = 238,9-291,20/0000) among population of the Republic of Kazakhstan for 2004-2009. In this case over a study period the prevalence of scoliosis among children pointed $489,3 \pm 15,30 / 0000$ (95% CI = 459,4-519,30/0000), among adolescents $1\ 622,8 \pm 79,1\ 0/0000$ (95 % CI = 1 467,8-1 777,8 0/0000), among adults $70,7 \pm 5,5$ (95% CI = 60,0-81,40/0000). The prevalence of scoliosis tends to decrease among the total population, while the average annual decrease rate pointed (-5.3%). Similar case was observed among adolescents (- 5.3%) and adults (- 8.8%). During the research period the tendency to insignificant increase of prevalence of scoliosis (0.04%) was noted among children. Thus the literary data of prevalence of scoliosis from 0,15% to 17,3%, with almost two orders of magnitude difference from each other is explained by examination of different age groups. Among the population of Kazakhstan for 2004-2009 scoliosis was found at 0,29% - 0,23% of the population, and among children (up to 14 years inclusive) - at 0,52% - 0,45%, among adolescents (15-17 years) - at 1,75% - 1,38%, among adults (18 years and older) - at 0,08% - 0,06%.

Abstract no.: 28740

COMPARISON OF CYTOTOXICITY BETWEEN TITANIUM ALLOY (TI-6AL-4V) AND PURE TITANIUM COATED TITANIUM ALLOY

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Titanium alloys have come to be among the most frequently used alloys in the orthopedic field for several reasons, including low modulus, high strength, and excellent corrosion resistance. One of the most common types of alloys typically contains aluminum and vanadium (Ti-6Al-4V). Unfortunately, vanadium has been found to cause adverse reactions. There are reports on the cytotoxic effects of titanium alloys that contain vanadium. We evaluated the effects of vanadium containing titanium alloy (Ti-6Al-4V) on osteoblast like cell (SaOS-2). We compared the vanadium containing titanium alloy processed with grit blasting, to grit blasted Ti alloy coated with pure Ti via electron beam deposition, *in vitro*. The morphologic assessment of cells through SEM showed that the two surfaces were covered with similar amounts of small slender osteoblast like cells. The amount of proliferation, ALP activity and the migration extent of the osteoblast like cell (SaOS-2) on the surface of each group, were statistically insignificant. This study differs from other studies in that methods actually being used in metal surface coating, grit blasting and electron beam deposition were used, these being much more biocompatible. Conclusively, we used the Ti coated Ti alloy using electron beam deposition and Ti alloy to evaluate the toxicity of Ti-6Al-4V on osteoblast like cell (SaOS-2). Ti alloy containing vanadium does not pose a toxic effect on the osteoblast like cell (SaOS-2) compared with pure titanium.

Abstract no.: 28741

COMPARISON OF BURTON PELLEGRINI TECHNIQUE WITH RESECTION ARTHROPLASTY FOR TRAPEZIECTOMY

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Background: Resection arthroplasty of the CMC joint with tendon interposition can be regarded as the gold standard. The aim of our study is to compare the Burton Pellegrini technique with a new modified technique of resection arthroplasty with interposition of local capsule tissue.

Materials and Methods: We retrospectively evaluated 2 groups of patients. Two Consultant Surgeons took part in the study and each consultant performed trapeziectomies using only one of the techniques for all his patients. The first group underwent trapeziectomy and local capsule interposition, consisting of 26 patients (average follow-up: 3.15 years). The second group underwent a standard Burton Pellegrini including flexor tendon interposition, consisting of 13 patients (average follow-up: 4.46 years). The outcomes were compared using the Michigan Hand Outcomes Questionnaire.

Results: We found that there was significant difference between the two procedures only on the ability of working in present ($p=0.038$). However, there was no significant difference between the other parameters we examined: overall hand function, activities of daily living using the operated hand, activities of daily living using both hands, overall activities of daily living, pain, aesthetics and patient's satisfaction. Furthermore, the overall score for the two procedures suggests that there is no significant difference between them.

Conclusions: The new modified procedure is simpler, quicker and with equal results when compared to the traditional operation. We have shown a difference between the two procedures in post-operative working ability, being better in the group with local capsule interposition.

Abstract no.: 28744

SODIUM BUTYRATE INDUCED CELLULAR SENESCENCE AND INHIBITED INVASION OF SARCOMA

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Sodium butyrate (SB) -C-4 saturated fatty acid present in the human bowel membrane in high concentration (2 mM) as food metabolites, has been reported as biological inducer of differentiation of several cancer cells resulting in growth arrest. However, the precise mechanism has not been fully elucidated. Here, we focused on the role of this natural chemical on sarcoma cell motility and invasion. SB inhibited human fibrosarcoma (HT1080) cell motility and invasiveness, decreased 2D cell growth and colony formation in soft agar in a dose-dependent fashion. SB also affected the morphology of the HT1080 cells, namely spread out, decreased peripheral ruffling and increased stress fiber formation. Phosphorylation levels of focal adhesion kinase (FAK, pY577 and pY397 sites) were increased, but phosphorylation level of myosin light chain was not affected. All of these biological effects of SB were reversible, and recovered after withdrawal. In addition, HT1080 cells treated with SB showed positivity for senescence-associated β -gal (SA- β -gal) staining with elevated expression levels of p53 and p21 proteins in a dose-dependent manner. Further, histone deacetylase inhibitor, Trichostatin A decreased 2D cell growth and affected the morphology of the HT1080 cells, but did not affect motility, invasiveness and SA- β -gal staining. Collectively, SB induced cellular senescence, inhibited invasion and growth, and would be a good candidate for anti-invasive therapy without severe adverse effects.

Abstract no.: 28749

ANTI-TUMOR EFFECT OF BEVACIZUMAB ON SYNOVIAL SARCOMA AND EWING SARCOMA

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Background: Ewing sarcoma (EWS) and synovial sarcoma (SS) showed poor prognosis, because of their chemoresistance and radioresistance. Thus a novel treatment of these sarcomas is needed. Bevacizumab (Bev), a humanized monoclonal antibody against vascular endothelial growth factor VEGF, is known to inhibit angiogenesis, and proliferation of primary and metastatic site of several malignancies. Thus we firstly determined the serum VEGF levels of patients with sarcoma, and found that they were high. The aim of this study is to examine the efficacy of Bev on SS and EWS, and to establish the anti-angiogenic therapy for these sarcomas. **Methods:** We used three human sarcoma cell lines established in our laboratory, Yamato-SS, Aska-SS, and Kamui-EWS. VEGF levels in their cultured conditioned media were determined with ELISA. We measured the tumor diameters by calipers and calculated tumor volumes once a week, and examined the tumor weight and colors at the end of xenograft experiments. **Results:** Two SS sarcoma cell lines secreted high levels of VEGF in their cultured media. The treatment with Bev significantly reduced tumor volumes of both SS cell lines *in vivo*. The excised tumors of treatment group were smaller, and looked low blood flow compared to control. **Discussion:** Bev treatment had the potential to become molecular target therapy on human SS. We would check the anti-angiogenic effect of Bev by microvessel density analysis, and try to examine the efficacy of combination therapy with Bev and ifosfamide, a key drug clinically used for these sarcomas.

Abstract no.: 28752

THE CORRELATION BETWEEN THE ETIOLOGY OF KNEE OSTEOARTHRITIS AND THE LEVEL OF METALLOPROTEINASES IN SERUM AND SYNOVIAL MEMBRANE

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BACKGROUND: Osteoarthritis is progressive intraarticular tissue degeneration. It is known that mainly the level of metalloproteinases (MMPs) increases in mucous liquid which nourish cartilage. In our study we evaluate correlation between etiology of knee osteoarthritis and level of MMP1, MMP2, MMP8, MMP9, MMP13 and MMP14 in serum and synovial membrane. **METHODS:** Studied group was composed of 54 patients (mean age 37,3 years. (SD 16,58)) divided into three subgroups: 1 with anterior crucial ligament (ACL) rupture included 18patients, 2 with meniscus lesions (17 patients) and 3 without previous injury included 19 patients. We collected 1ml blood samples preoperatively and synovial membrane samples during the knee arthroscopy. Genetic probe and real time PCR was then used to analyse each of the sample. **RESULTS:** We found strong correlation by using Pearson correlation test between serum and synovial membrane for MMP1 rho 0,57 and MMP2 rho 0,639 ($p<0,0001$) whereas poor and not significant for MMP8 (rho 0,190, $p=0,1663$) and MMP13 (rho 0,0874, $p=0,5244$). By using Mann-Whitney test we found that in most MMPs the highest level was find in patients with ACL rupture and the lowest with cartilage damage only (f.ex. synovial membrane MMP2 : IQR 1. 0,2210-0,3090, 2. 0,1428-0,1763, 3. 0,1173-0,1338; $p<0,0001$). In some MMP types the difference is little or statistically insignificant (f.ex. serum MMP14 IQR 2. 0,019 – 0,027, 3. 0,0175 – 0,02567, $p=0,3749$). **CONCLUSION:** We found that there is a positive correlation between most types of MMPs between serum and synovial membrane. We also found differences in MMPs levels in studied groups which may correspond with osteoarthritis etiology.

Abstract no.: 28755

INTERPOSITION OF PERIOSTEUM IN DISTAL TIBIAL PHYSEAL FRACTURES OF CHILDREN

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We evaluated the factors influencing periosteal interposition in distal tibial physeal fractures of children. 34 cases of distal tibial physeal fractures were analysed. We confirmed the presence of periosteal interposition with MRI in all cases and accessed the relationship between periosteal interposition and gender, age, cause of injury, type of fracture, degree of initial displacement and after closed reduction. 9(26.5%) of 34 fractures had interposed periosteum. There was no statistically significant correlation between periosteal interposition and gender, age, cause of injury ($p>0.05$). 5(83.3%) of 6 pronation-eversion-external rotation type of fractures according to Dias-Tachjian classification had interposed periosteum and that was a statistically significant correlation ($p=0.006$). As Salter-Harris type was toward to high degree, there were decreasing tendency of periosteal interposition ($p=0.026$). There was high rate of periosteal interposition in case of displacement more than 2 mm in each initial and after closed reduction ($p<0.05$). There was high incidence of periosteal interposition in pronation-eversion-external rotation type with displacement more than 2 mm in distal tibial physeal fractures of children. But, periosteal interposition could occur in fractures with mild displacement less than 2 mm, if initial fracture was more than 2 mm, the methods of treatment should be decided after confirm the presence of periosteal interposition with MRI after closed reduction.

Abstract no.: 28756

SEQUENTIAL DETECTION OF CIRCULATING TUMOR CELLS (CTCs) IN MOUSE OSTEOSARCOMA DUNN AND ITS HIGHLY METASTATIC SUBLINE LM8

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Tumor metastasis is composed of local invasion of primary site, entry into the circulation, survival in the blood, extravasation, and colonization. The presence of circulating tumor cells (CTCs) fits very well with this theory, thus the detection of CTCs has been considered to assess metastatic potential. However, most technologies for their detection using antibody or RT-PCR may detect dead cells besides living CTCs. In this study, we firstly made the method to detect only living CTCs, secondly investigated the dynamic detection of CTCs from Dunn osteosarcoma and its highly metastatic subline LM8. We also examined anti-anoikis resistance in anchorage-independent condition in both cells. In anoikis assay, we cultured both cells on non-adhesional plate with swing and counted living floating cells with typan blue staining. In vivo experiments, we subcutaneously transplanted 1×10^7 both cells into the back of syngeneic C3H mice and collected 40 μ l of blood sample once a week for 5 weeks. Then we cultured the sample and detected their colonies as living CTCs. There were no differences in anti-anoikis resistance in vitro or in primary tumor growth in vivo in both cells. In contrast, LM8 showed massive pulmonary metastasis in all mice after 5 week, but Dunn did not. LM8's CTCs could be detected at 2 week in some mice and almost all mice showed CTCs at 5 week. In the case of Dunn, first detectable timing of CTCs was slightly delayed compared to LM8, and final CTCs percentage in mice was 56%. We detected living CTCs in Dunn, however there was no metastasis. The timing of Dunn's CTCs appearance was slightly delayed and the detectable percentage was approximately half compared to LM8. In sum, entry and survival in the circulation would be critical steps to acquire the highly metastatic potential of LM8.

Abstract no.: 28757

**RISK FACTORS FOR PROXIMAL FEMUR FRACTURES IN PATIENTS
OLDER THAN 50 YEARS OF AGE**

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We aimed to investigate the relationship between hip fracture due to simple fall and bone mineral density (BMD), biochemical markers of bone turnover and related hormones in patients older than 50 years of age. 116 patients were divided into two groups as control and fracture. Fracture group included 67 patients with proximal femur fracture and control group included 49 healthy adults older than 50 years of age. BMD measurements of proximal femur were obtained using DEXA. Plasma levels of calcium, phosphate, magnesium, alkaline phosphatase, parathormon, 25-hydroxivitamin D, albumin and LDH were analyzed. Estrogen levels were analyzed in women. Mean age of fracture group was higher ($p<0.001$). Fracture group had worse t-scores, z-scores and BMD in both genders ($p<0.001$). Fracture group had lower levels regarding plasma estrogen, Ca, 25-hydroxivitamin D and higher levels regarding parathormon, LDH, alkaline phosphatase and magnesium than control group. There were no significant differences between groups regarding phosphate and albumin levels. We conclude that, high plasma parathormon level as well as low plasma estrogen, Ca and 25-hydroxivitamin D levels may increase the risk for proximal femur fractures in patients older than 50 years. Fracture risk may also be associated with decreasing BMD and increasing age in such patients. High plasma alkaline phosphatase and LDH levels may be associated with fracture healing.

Abstract no.: 28758

A NEW BADO TYPE 1 EQUIVALENT MONTEGGIA LESION IN A CHILD

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The authors report a case of fracture of proximal fracture of ulna combined with a epiphyseal and diaphyseal fracture of the radius such as a new type 1 equivalent monteggia lesion in a child. A five-year-old boy fell one story and sustained a closed injury of his forearm. A closed reduction was unsuccessful, open reduction and fixation with a 1/3 tubular plate for ulna fracture and with K wires for epiphyseal fracture of the radius were performed. Non- displaced fracture of 1/3 middle third of the radius was treated conservatively. These wires were removed three weeks later, and range-of-motion exercises were started. At the 8 months follow-up, the radiographs showed good alignment and complete union of the fractures and the proximal radial epiphyseal line appeared opened. Joint motions, including forearm rotation, were normal.

Abstract no.: 28761

PROGNOSTIC FACTORS IN RETEAR OF ARTHROSCOPIC DOUBLE-ROW REPAIR FOR LARGE OR MASSIVE ROTATOR CUFF TEARS

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(Purpose) The purpose of this study was to analyze prognostic factors relating to retear of arthroscopic double-row repair for large or massive rotator cuff tears. (Methods) 45 patients with average age of 63.6 years underwent arthroscopic double-row repair using suture anchors were the subjects of this study. On types of the tears, large tears were observed in 31 patients, and massive tears in 14 patients. The clinical outcomes were evaluated on the basis of the UCLA shoulder scale, and the structural outcomes were assessed using postoperative MRI performed 14.1 months on average. Postoperative MRI revealed sufficient thickness of the repaired cuff in 26 patients, thinning in 7 and retear in 12. Various patient-related factors were compared between the 33 patients without retear and the 12 patients with retear. The average follow-up period was 17.8 months. (Results) The average UCLA scale improved significantly from 16.9 points preoperatively to 32.9 points postoperatively. Postoperative UCLA scales of the 12 patients with retear were significantly lower than those of the 33 patients with intact repair. The patients with retear were significantly older than those without retear. The 9 patients without history of trauma had markedly higher retearing rate than the 36 patients with history of trauma. The retearing rates of the patients with subscapularis tear, LHB rupture or diabetes were significantly higher than those without them. (Conclusion) This study suggests that older age, history of trauma, subscapularis tear, LHB rupture and diabetes may be incriminated as the causes of retears of the repaired cuff.

Abstract no.: 28764

POSTERIOR SURGICAL CORRECTION OF SEVERE ADULT SCOLIOSIS

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Objectives: Adult scoliosis is a presentation of deformity after skeletal maturity and the pathophysiological description of adult scoliosis as a curve that start before skeletal maturity and patient does not seeking treatment until or after skeletal maturity because of limited or deficient treatment capacity. **Method and Treatment:** Our study discussed our experience in dealing with 25 adult neglected scoliosis referred from Iraq with Cobb angle more than 90° with limited budget and time of hospitalization. Their main complaints are pain, difficulty in breathing and cosmesis. All are treated by posterior surgical correction and fusion using different implants, and some need Smith Peterson osteotomy and kyphoplasty. **Results:** • One case superficial infection. • One case temporary weakness resolved within 6 months. • One case bleeding resolved with blood transfusion. **Conclusion:** Our aim to improve their quality of life following these surgeries in the form of relieving of pain, improve their pulmonary function test, prevent progression of the curve, improve balance, provide spinal deformity correction (Cosmosis), and decrease the Cobb angle to 20° to 30°.

Abstract no.: 28769

ROLE OF “TROCHANTERIC FLIP” OSTEOTOMY IN HIP AND ACETABULAR FRACTURES

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Introduction: The management of displaced fractures of acetabulum has changed from conservative approach to the surgical intervention. However, the surgical approach is dependent on the type of fracture, associated injuries and surgeons' expertise. The need to visualize the articular congruity and prevent avascular necrosis makes the digastric osteotomy advantageous in the management of such fractures. **Methods:** All cases of acetabular fractures and the femoral head fractures operated by the surgeon over the last three years were included in the study. The functional results were noted along with their fracture patterns and analysed. **Results:** Out of the 78 cases operated, 23 cases underwent digastric osteotomy during their surgery. These included 8 cases of femoral head fractures and rest were of posterior column and/or posterior wall fractures. In all these cases, there was a better visualization of the fracture fragments and also of the articular wall thus helping in the reduction process. Further most of the cases of posterior wall fracture with posterosuperior fragments were fixed using digastric osteotomy. All the cases of osteotomy site united within three months. **Conclusion:** The new technique of digastrics osteotomy leads to mobilization of the greater trochanter. It is a useful tool in the armamentarium of the surgeon while operating on acetabular fracture having posterosuperior fragment and also in femoral head fractures.

Abstract no.: 28770

SOFT TISSUE TUBERCULOSIS: THE HARD FACTS OF A RARE PRESENTATION

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Introduction: Soft tissue tuberculosis is defined as infection of muscles, tendon sheath, or bursa without the osseous involvement. This is a very rare entity with very few cases reported in the world. With the increase in the incidence of tuberculosis worldwide, soft tissue tuberculosis is likely to increase and can cause diagnostic dilemmas for the treating clinician.

Methods: All cases of tuberculosis presenting at our orthopaedic clinics over the last five years were analysed and cases pertaining only to soft tissue without the concomitant skeletal involvement were included in this study. The cases were diagnosed on the basis of ultrasound and MRI findings and the disease confirmed by histopathology. The abscess were drained if localised. All the patients were treated with standard antitubercular treatment for a period of one year.

Results: There were seventeen cases of soft tissue tuberculosis in our study. Fourteen cases of tubercular tenosynovitis of the tendons at the level of wrist both flexor and extensor was noted. None of the cases had pulmonary tuberculosis associated or were immunocompromised. One case involved the biceps brachii muscle while the other involved vastus lateralis muscle of the thigh. One of the cases involved isolated involvement of flexor digitorum profundus at the mid forearm level. Ultrasound guided aspiration was performed in cases with localised lesion. All patients recovered well with antitubercular treatment and had no functional loss.

Discussion and Conclusion: Soft tissue tuberculosis without skeletal involvement is a rare pathology. Its incidence is bound to increase with the resurgence in tuberculosis worldwide. Proper knowledge of the clinical features, radiological patterns along with treatment protocol is essential for the proper management of such rare cases.

Abstract no.: 28771

CONTINOUS MONITORING AND FEEDBACK OF PARTIAL WEIGHT BEARING USING THE NEW TELEMETRIC GAIT ANALYSIS DEVICE MEDICO STEP

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Introduction: In the postoperative rehabilitation protocol after bone and joint surgery patients may be mobilized with partial weight bearing (PWB) of the affected extremity. Patients with PWB use two forearm crutches in order to weight half of their body weight. In clinical practice the physiotherapist teaches patients under static conditions to put weight on their lower extremity to a target load. This is described as insufficient by previous authors. A device to provide concurrent and postresponse feedback was investigated.

Patients and Methods: We constructed a forearm crutch in order to evaluate the effective amount of PWB. This crutches measure all relevant loads, and, according to a special algorithm immediately send a feed back to the patient acoustically and/ or with a vibration alarm at the handles of the crutches. An upper and lower load bearing limit can be predefined. We evaluated patients immediately after primary knee arthroplasty to investigate their ability to perform PWB with switched off feedback alarms. The mobilisation of each patient was with PWB of half of their body weight.

Results: We investigated 16 Patients (12 males, 4 females). The mean body weight was 85 kg (53-101 kg). The forearm crutches were in continuous use for 3 days (2-7). In total, 6.160 gait cycles were performed (56-1078, mean 385). Overloading was measured in 331 gait cycles per patient (9-1022) and broken down in steps of 5 kg.

Conclusion: Following our results, even hospitalized patients under physiotherapeutic training are not able to perform prescribed PWB.

Abstract no.: 28777

A NEW METHOD FOR DETERMINATION OF CUP ORIENTATION AFTER THA BASED ON 2D/3D-RECONSTRUCTION

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Short- and long-term results of total hip arthroplasty (THA) are well associated with the correct component positioning. Accurate assessment of cup orientation is essential for evaluation of the outcome. Our goal was to validate accuracy and reproducibility of a new 2D3D reconstruction based method for determining cup-orientation after THA. This method allows reconstructing a patient-specific 3D-model from a standard anteroposterior X-ray radiograph using a statistical shape model-based deformable registration technique. Cup orientation (inclination and anteversion) is then calculated with respect to the anterior pelvic plane that is derived from the reconstructed 3D-model. The method was validated on datasets of 20 hip joints. For each patient, one post-operative x-ray radiograph and one post-operative CT-scan was available. The measurements from the post-operative CT-scans were regarded as the ground truth. The average ages for the patients were 69,4±8,5 (49-82) years. The average cup inclination and anteversion measured from the post-operative CT-scans were found to be 45,5±7,8° (26,6°-62,9°) and 22,6±10,6° (3,2°-51,4°), respectively. The mean accuracy of the 2D3D reconstruction based method was 0,4±1,8° (-2,6°-3,3°) for inclination and 0,6±1,5° (-2,0-3,9°) for anteversion. The accuracy achieved by this method as demonstrated in the present study is comparable to those reported in previous studies which depend on 2D3D matching of a CT-scan of the patient with an X-ray radiograph. But in contrast to those studies, no specific calibration of the X-ray radiograph, or a CAD model of the implant, or a CT-scan of the patient is required. Our validation results demonstrate that this method is an accurate, consistent and reproducible technique to measure cup orientation from post-operative x-ray radiographs.

Abstract no.: 28779

SALVAGE PROCEDURE USING SACRAL ALAR ILIAC TECHNIQUE FOR FAILED LUMBOSACRAL FIXATION

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Introduction: Pelvic fixation is a problematic area because the low bone quality of the sacrum, the regional anatomy, and the biomechanical forces at the lumbosacral junction are some of the reasons for high rates of instrumentation failure. To date, the preferred method of pelvic fixation has been controversial. And then, salvage for failed pelvic fixation continues to be a challenging to spine surgeons.

Objectives: To report a case of failed lumbosacral fixation treated by a salvage procedure using sacral alar iliac technique.

Study Design: Case report. **Methods:** A 78-year-old man underwent lumbosacral fixation from the L3 to the S1 using sacral plate system (COLORAD II, Medtronic Sofamor-Danek, Memphis, TN) as anchors of the sacrum for treatment of L4 and L5 spondylolisthesis co-existing with L4-5 disc destruction. Six months later, the clinical symptoms deteriorated and the lumbosacral fixation had failed with pseudarthrosis at L4-5 and L5-S. Massive bone defects surrounding the S1 pedicle screws and S1 alar screws were observed on computed tomography (CT) images. A salvage lumbopelvic fixation from the L2 to the pelvis using hydroxyapatite-augmented S1 pedicle screws and sacral alar iliac screws as the anchors of the pelvis was performed. **Results:** The clinical symptoms were immediately relieved after surgery. On radiographic evaluation, the segments from L4 to S1 were rigidly re-stabilized after surgery. **Conclusions:** The sacral alar iliac technique might be a useful technique as an anchor of the pelvis for failed lumbosacral fixation.

Abstract no.: 28781

ANTI-MICROBIAL IMPREGNATION FOR BONE ALLOGRAFT

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Objectives: Development of bone allograft coating system based on three different gentamicin substrates. Efficacy tests of the coating systems for drug delivery. **Methods:** Bone chips obtained from femur heads were impregnated with gentamicin sulfate, gentamicin palmitate and Herafill® powder with gentamicin sulfate. The samples were immersed in phosphatase buffer saline (PBS) solution and incubated for 7 days at 37°C on a rocking table. After 1, 4, 8, 12 hours and 1, 2, 3, 4, 5, 6 and 7 days an aliquot of the solution was taken and submitted to high performance liquid chromatography (HPLC) analysis. **Results:** The impregnation of the bone chips with gentamicin sulfate, gentamicin palmitate and Herafill® as powder was easy and fast to be carried out. An expected result of the HPLC analysis is the difference between the drug delivery rate after the time and for the different antibiotic associations. Preliminary studies showed that the delivery of gentamicin (as base) from different carriers reach a high concentration on the first and second day, maintaining or decreasing after the third day. According to the hydrophobic characteristic of gentamicin palmitate, a continuous delivery rate is expected for this group along the experimental days. **Conclusions:** These preliminary tests showed that the method used is easy and economic for impregnation of bone grafts with antibiotic. This procedure once incorporated to the bank bone routine could increase the quality of the samples as well as the quality of the medical procedures.

Abstract no.: 28783

RESPONSE OF THE DORSAL ROOT GANGLIAS TO LIMB LENGTHENING

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Limb-lengthening by callus distraction is a widely used surgical procedure to correct bone deformities. We used a model of tibial lengthening in rabbits to study the postoperative pain pattern during limb-lengthening and morphological changes in the dorsal root ganglia (DRG), including alteration of substance P (SP) expression. Four groups of animals (naïve; OG: osteotomised only group; SDG/FDG: slow/fast distraction groups, with 1mm/3mm lengthening a day, respectively) were used. Signs of increasing postoperative pain were detected until the 10th postoperative day in OG/SDG/FDG, then they decreased in OG but remained higher in SDG/FDG until the distraction finished, suggesting that the pain response is based mainly on surgical trauma until the 10th day, while the lengthening extended its duration and increased its intensity. Cell size analysis of the S1 DRGs showed no cell loss in any of the three groups; a significant increase in the number of SP-positive large DRG cells in the OG; and a significant decrease in the number of SP-immunoreactive small DRG neurons in the SDG/FDG. Faster and larger distraction resulted in more severe signs of pain sensation, and further reduced the number of SP-positive small cells, compared to slow distraction. Our data suggest the importance of small neurons expressing SP in development and maintaining of stretch nerve injury induced pain states, and that de novo expression of SP in the large cells is likely to correspond to regeneration.

Abstract no.: 28784

HISTOLOGICAL EVALUATION OF A NEW MONETITE/WOLLASTONITE/SILICA-GEL BONE REGENERATIVE SCAFFOLD IN A SHEEP MODEL

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SilOss®-W is a new bone regeneration scaffold developed by AzureBio S.L. and obtained through an acid-base reaction between wollastonite (CaSiO_3) and phosphoric acid (H_3PO_4). It consists of granules of size ranging between 250 and 1000 μm constituted by crystals of monetite (CaHPO_4) and wollastonite embedded in a matrix of silica gel ($\text{H}_2\text{SiO}_3 \cdot n\text{H}_2\text{O}$). SilOss®-W is resorbable and release ionic species potentially able to stimulate bone regeneration. Cylindrical defects of 8 mm of diameter and 13 mm of length were made bilaterally in the condyles of the femur, tibia and humerus of female adult sheep. Six defects were randomly filled with SilOss®-W and other six were left empty and used as controls. After 16 weeks animals were sacrificed and the implant and control sites were removed. Bone fragments were fixed, dehydrated and embedded in methyl methacrylate. After polymerization serial sections were cut and stained with Goldner's Trichromic and Von-Kossa dyes. Histological evaluation showed almost complete resorption of SilOss®-W granules. The scarce remaining particles seem to be perfectly osteointegrated. Intense osteogenic activity, new bone ingrowth and good revascularization associated to the implant material were observed. On contrary, control defects remained practically empty after 16 weeks. The results indicate that SilOss®-W is a promising scaffold for bone regeneration.

Abstract no.: 28788

POROUS FIBRE-REINFORCED SILOSS®-W BLOCKS FOR BONE REGENERATION: HISTOLOGICAL EVALUATION AFTER IMPLANTATION IN SHEEP

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SilOss®-W is a new bone regeneration scaffold comprising monetite, wollastonite and silica gel. It is characterized by a high porosity and surface area. It is non-cytotoxic and stimulates proliferation of osteoblastic cells. In this work porous pieces of SilOss®-W were evaluated in a critical bone defect in sheep. Resorbable fibres of catgut or polyglycolic acid were added in order to increase the in vivo porosity but increasing the initial strength of the pieces. Catgut fibres of 150-200 μm diameters resorb after 7 days, and PGA fibres of 400-500 μm diameters resorb slower, after 40 days. Cylindrical pieces 8 mm Ø and 13 mm in height of SilOss®-W with and without PGA or catgut fibres (each group n=4) were randomly implanted in critical defects created in condyles of femora, humera, and tibiae of sheep. Empty defects were used as negative controls. After 16 weeks of implantation the bone defects were collected. Non-decalcified samples were stained by Goldner's Trichrome and Von-Kossa techniques for histological analysis. Results showed resorption of the three SilOss®-W blocks, probably through a mechanism involving both dissolution and phagocytosis through cellular mechanism. Pieces without fibres and with PGA showed a great osteogenesis and active osteoblasts producing new osteoid and bone. Samples with catgut fibres showed the lowest osteogenesis. In Control defects scarce osteogenesis was observed. Summarising porous SilOss®-W blocks with PGA fibres showed the best in vivo behavior characterized by a high osteogenic activity, bone remodeling and homogeneity between samples.

Abstract no.: 28800

SURGICAL TREATMENT OF SPINAL DEFORMITIES IN ELDERLY PATIENTS

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(Purpose) The purpose of this study was to investigate the results of surgical treatment for spinal deformities in elderly patients. (Materials and methods) Eighteen patients over 65 years of age who underwent spinal correction and fusion due to spinal deformities were reviewed retrospectively. They consisted of 2 males and 16 females whose mean age at surgery was 75 years (range: 65-86 years). The mean follow-up period was 28 months (5-47 months). Twelve patients underwent combined anterior and posterior spinal fusion with some osteotomies. Six patients underwent posterior spinal fusion. In these cases, we evaluated the surgical methods, fusion area, operation time, EBL, change of deformities, clinical results, comorbidities and perioperative complications. (Results) The mean Cobb angle of scoliosis was 33.3° before surgery, 12.2° after surgery and 12.7° at follow-up. The mean lumbar kyphosis was 17.2° before surgery, -13° after surgery and -9.9° at follow-up. Coronal and sagittal balance was improved and maintained at follow-up. The mean JOA score was 10.1 before surgery and 19.2 after surgery. Twelve patients had comorbidities and perioperative complications occurred in 12 cases. Late complications occurred in 7 cases. Junctional kyphosis was detected in 4 cases, and adjacent vertebral collapse in 3 cases. The overall fusion rate was 89% at follow-up. (Conclusions) In this investigation, spinal deformities in elderly patients were well corrected and maintained. Many cases had some comorbidities and showed perioperative and late complications. Thus, we must be careful in determining the surgical indications for spinal deformities in the elderly.

Abstract no.: 28801

IN VIVO BEHAVIOR OF A NEW MONETITE/SILICA-GEL BASED BIOMATERIAL FOR BONE REGENERATION

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Hydroxyapatite and tricalcium phosphate have been widely used in clinical bone regenerating procedures. Monetite is more resorbable than HA and TCP and it is expected that in vivo it is replaced by new bone faster. SilOss®-G is a new family of non-sintered biomaterials developed by AzureBio S.L and mainly constituted of crystalline monetite and bioglass (SiO₂/CaO system) particles embedded in an amorphous silica gel matrix. SilOss®-G is expected to be biocompatible, resorbable and osteoinductive. The aim of this work is the histological evaluation of the tissue response and the osteogenic potential of SilOss®-G granules. Cylindrical defects of 8 mm Ø x 13 mm length were made in the femur, tibia and humerus condyles of female adult sheep. Six defects were randomly filled with SilOss®-G (granules size: 250-1000 µm) and other six defects were left empty and used as negative control. Sheep were sacrificed at 16 weeks after surgery. Non-decalcified sections were stained with Goldner's Trichromic and Von-Kossa techniques. SilOss®-G was found to almost complete resorb after 16 weeks. New bone was formed from the bone-material interface to the inner of defect. High osteogenic activity was observed and the trabecular bone at the bone-material interface showed osteoblastic activity with new osteoid being deposited. Histological analysis revealed good osteointegration of the implant. Scarce bone formation was observed in the control defects and the majority of the cavity with filled with adipose tissue. In conclusion: SilOss®-G is resorbable and stimulates the bone regeneration.

Abstract no.: 28805

**EARLY EPIDURAL HEMATOMA AFTER POSTERIOR DECOMPRESSION
FOR LUMBAR SPINAL CANAL STENOSIS**

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[Purpose] In order to determine the real frequency and the condition of the epidural hematoma which occurs after posterior decompression for lumbar spinal canal stenosis, 135 patients were studied prospectively. [Methods] The patients consisted of 77 men and 58 women, whose mean age was 68 years. All patients had the closed-system drains placed at surgery. Those were removed after 2 days. Postoperative MRI was performed at 3 days after surgery. The condition of epidural hematoma were classified into four groups as follows, severe; the dural tube were compressed by epidural hematoma into less than 1/3 of normal level size, moderate; compressed into less than 2/3 , slightly; compressed but keep greater size than 2/3, none; the dural tube were not almost compressed. [Results] All patients showed neurological improvement after surgery. But 31 patients (23%) showed severe epidural hematoma and marked compression of dural tube. 30 patients were moderate, 51 patients showed slightly and none were 23 patients. 19 patients experienced buttock and posterior thigh pain transiently. There were no significant correlation between age at operation, range of decompression, intraoperative bleeding and the condition of postoperative hematoma. However, the postoperative bleeding of severe group was smaller than other groups. The preoperative coagulopathy did not influence the degree of postoperative hematoma. [Conclusion] The remarkable postoperative hematoma after posterior decompression for lumbar spinal canal stenosis was recognized in 23%. It was obvious that the postoperative hematoma were in 45% cases with severe and moderate condition. We should recognize that the incidence of postoperative hematoma is greater than that had been reported.

Abstract no.: 28807

DIRECT RETROPERITONEAL PACKING AS A RESUSCITATION TECHNIQUE FOR HEMODYNAMICALLY UNSTABLE PATIENTS WITH PELVIC FRACTURES

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(Introduction) Major pelvic trauma is associated with high mortality, and no standard technique to control pelvic hemorrhage has yet been identified. We have recently used mechanical stabilization followed by direct retroperitoneal packing to control life-threatening hemorrhage due to unstable pelvic fractures. (Methods) For a total of 11 patients treated for unstable pelvic fractures at our level I trauma center between 2008 and 2010, we retrospectively analyzed type of injury, timing of operation, time to peritoneal packing, complications, and mortality. (Results) The 11 patients (7 men, 4 women; median age, 48.2 years) had a median injury severity score of 44.5, median revised trauma score of 2.76, and median probability of survival of 0.246. There were 6 open pelvic fractures. The median time to peritoneal packing from emergency department arrival was 24.7 min, and median operating time was 8.4 min. Additional operations were 3 laparotomies, 6 emergency room thoracotomies with aortic clamping and 1 thigh amputation. One patient was complicated by acute abdominal compartment syndrome. There were 3 survivors, 2 of whom were among the 6 patients with open pelvic fractures. A comparison of survivors and non-survivors with respect to clinical parameters revealed no significant differences; however, time to peritoneal packing from arrival tended to earlier in survivors than in non-survivors (20.2 min vs 26.4 min, p=0.21). (Conclusion) Our data suggested that without retroperitoneal packing, all our patients might have died. We recommend direct retroperitoneal packing for critical patients in massive hemorrhagic shock, especially those with open pelvic fractures.

Abstract no.: 28808

A LONG-TERM FOLLOW-UP OPERATED CASE REPORT OF ACROMEGALY WITH OSSIFICATION OF THE SPINAL CANAL LIGAMENTS OF THE THORACIC SPINE

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(Purpose) It is recognised that the patient with acromegaly shows the ossification of the posterior longitudinal ligament(OPLL) or the ossification of the ligamentum flavum(OLF) frequently in the spinal canal. However there were few reports that were operated for these conditions and were followed up a long term period. This is a report that was operated for thoracic myelopathy due to OPLL and OLF with acromegaly, and followed up 17 years over. (Object and Result) Thirty six years old female complained severe gait disturbance at first examination. The palsy of both lower extremities was remarkable. She could not stand up and gait and she showed myelopathy below Th4 level. The reflexes of the lower extremities were accelerated and pathological reflexes were seen. The X-rays showed the OPLL and OLF at thoracic spine. In the head MRI there was big hypophyseal tumor. The thoracic MRI showed severe cord compression at Th1/2 level due to OPLL and OLF. The CT-myelogram showed multilevel OPLL below C6/7, and multilevel OYL below Th1/2. For this case two-staged operations were performed. First, the laminoplasty of cervical spine and the laminectomies of Th1-4 for shifting the spinal cord dorsally and achieved decompression. Secondary, the laminectomies of Th7-12 were performed. After operation her gait disturbance recovered gradually and could walk without support. The MRI showed good decompression of spinal cord. 12 years later additional laminectomies were performed at Th12/L1 level. Post operative 17 years the decompression effect continues and MRI are good. But the changes of the alignment are seen at thoracic spine. The kyphotic angle of Th1-Th10 increased from 40 degrees to 55 degrees.

Abstract no.: 28812

**COMPARISON OF CLINICAL AND RADIOGRAPHIC RESULTS FOR
BURST FRACTURE OF THE THORACOLUMBAR JUNCTION AFTER
DIFFERENT SURGERIES**

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Background: The Treatment of unstable burst fractures at thoracolumbar junction involves various types of surgeries that include anterior decompression with anterior stabalisation, anterior decompression with posterior stbalisation (single stage), anterior decompression with posterior stbalisation (two stage).We present our experience at apex trauma centre in respect with the impact of surgeries in Indian patients. **Methods:** 40 patients of unstable thoracolumbar burst fracture were admitted at the trauma centre who underwent various types of surgeries that included anterior decompression with anterior stabalisation, anterior decompression with posterior stbalisation (single stage), anterior decompression with posterior stbalisation (two stage). The cases were followed from 1 to 3 years, The different results were evaluted in terms of radiological and clinical results at followup. **Conclusion:** The present study demonstrates that excellent results of the unstable burst fracture in Indian patients with different surgical techniques reproduces similar radiological and clinical results as the patients of developed countries. There is a definite advantage of anterior decompression in these patients.

Abstract no.: 28813

THE RESULTS OF SURGERY IN CEREBRAL PALSY AND POLIO PATIENTS

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C.P. and Polio are two common neuromuscular disorders seen in children. As age advances, these disorders can lead to progressive loss of muscular weakness, and contracture of affected joints. This is a study of 103 patients treated by me from January 2004 to December 2009. 69 patients were affected with cerebral palsy and 34 with poliomyelitis. There were 66 male and 37 female. Their age ranged from 2 to 23 years. Common presentation in CP patients was spastic gait and in polio hand knee gait. Scissoring was the commonest deformity in lower limb and pronation and wrist flexion deformity in upper limb in CP patients. Lower limbs were operated in 89 patients and upper limb in 14. Surgical procedures included soft tissue release, tendon transfer, corrective osteotomy and arthrodesis. One patient of polio and 4 patients of CP lost the follow up. All patients improved significantly. The results were better in polio patients than CP. Younger the patients, better the results. These disorders are quite common in developing countries like India due to poor socio-economic conditions of nation. Surgical treatment indicated when deformities and/or contracture interfere with activities of daily living. In early stages most of the deformities and contracture can be corrected with soft tissue release to tendon transfer. Surgery can achieve in hours what physiotherapy cannot in years.

Abstract no.: 28815

FAILED ANTERIOR CRUCIATE LIGAMENT SURGERY SYNDROME

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Purpose: Failed ACL Surgery Syndrome (FACLS) includes the associated clinical symptoms and signs that occurred after ACL surgery. A classification was postulated for clinical assessments and subsequent treatments. This study analyzed 74 failed primary ACL operations to determine the classification according to the clinical presentations and anatomical insufficiencies that contributing to surgical failure. Treatment protocols for each type were proposed. Materials and methods: From 1998 to 2009, 112 failed primary ACL surgeries cases from clinics and refer regarded as failure after surgery were included for analysis. These cases were classified into 6 types of failures according to the clinical presentation: Type 1 is complete tear of graft; Type 2 is partial tear of graft; Type 3 is loose graft; Type 4 is combined associated instability; Type 5 is mal-alignment or osteoarthritis; Type 6 is incomplete ROM Results: The average time from index surgery to confirmation of failure was 4.6 years (median, 2.6 years; range, 8 months to 10 years). Type 1: 18 cases(16%); Type 2: 27 cases (24%); Type 3: 36 cases (32%); Type 4: 12 cases (11%); Type 5: 10 cases (9%); Type 6: 9 cases (8%). The common etiologies of failure were: improper tunnel position; reinjury; inadequate graft selection; inadequate graft fixation. Treatments for these failed cases included ACL revision surgery, reconstruction for associated insufficiency, high tibial osteotomy, and salvage arthroscopic treatment depending on the etiologies of failure. Conclusion: A classification for FACLS was presented for inspecting the disease presenting spectrum, better evaluation of failure etiologies and determination for subsequent treatments.

Abstract no.: 28816

SUBTROCHANTERIC FRACTURE: CHARACTERISTICS OF X-RAY ASSOCIATED WITH LONG-TERM BISPHOSPHONATE USE

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BACKGROUND: There have been several reports on atypical subtrochanteric and femoral shaft fractures associated with long-term bisphosphonate use. We performed retrospective study of subtrochanteric fractures injured by low velocity traumas and assessed characteristics of X-ray findings. **METHODS:** 12 subtrochanteric fracture patients who admitted to our institution between 2005 and 2010 were included. Under 50 years old, high energy injuries, and pathological fractures were excluded. We investigated gender, age, classification of fracture, neck-shaft angle, lateral cortical thickness at the subtrochanteric level, the ratio of inner outside cortical thickness, and presence of bisphosphonate use. **RESULTS:** 4 men and 8 women were enrolled and their median age was 68 years (58-100). Of these there were 2 patients who had long-term bisphosphonate use. As for the bone fracture type, there were 2 patients in 2C type, 7 patients in 3B type, 1 patient in each 2A, 2C, 3A types of the Seinsheimer classification. 2 patients having long-term bisphosphonate use were 2A type and 3A type. And only one 2A type patient had three unique fracture configurations, thickening of the lateral femoral cortex, transvers fracture, and cortical beak. These radiological features were not seen elsewhere. Significant differences were seen in neck-shaft angle, thickness of lateral femoral cortex, and ratio of the inner outside cortical thickness ($p<0.05$). **Consideration:** However it was concluded there was no significant increase in risk of subtrochanteric fractures associated with bisphosphonate use by Black in 2010, there have been recent reports linking bisphosphonate and atypical subtrochanteric fractures appeared after 2005. We found significant decrease of neck-shaft angle and thickening of lateral femoral cortex in subtrochanteric fracture patients with long-term bisphosphonate use.

Abstract no.: 28818

THE RESULT OF SPINAL CORD TUMOR SURGERY

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Most spinal surgical procedures are extradural and only few procedures require intradural exploration. Spinal tumors are rare and intradural tumors are extremely rare. The author is sharing his experience of intradural tumors surgery. The aim of this study is to evaluate the results of surgical removal of intradural tumors. This is a study of 12 patients who presented with signs and symptoms of myelopathy. Seven patients were female and 5 male. Their age ranged from 4 to 55 years (average age 42 years). Dura was opened in midline from above downwards. The tumor was identified, separated from surrounding tissue and removed completely in all patients except one. All the cases, except one case of astrocytoma, recovered completely. Last follow up did not reveal any evidence of recurrence. All but one patient regained all their pre-tumor activities. Clinically, the patients with intradural tumors present first with a gait disturbance. The intradural tumors are best seen in MRI. The tissue manipulation is significantly different for intradural procedures than that of extradural procedures. Almost all these tumors can be cured surgically. However, only well trained and well experienced spine surgeons should attempt intradural surgeries.

Abstract no.: 28820

ISOPA- MALAYSIAN RESULTS: COMPARISON OF CLINICAL PRACTICE WITH OTHER ASIAN COUNTRIES

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International survey of osteoporosis in Asia (ISOPA) study was conducted in 2008 in 9 Asian countries. Osteoporosis treatment pattern could be influenced by national policy and resources; availability of new drugs and cost considerations etc. Therefore, the ISOPA data was used to compare the Malaysian results with the other Asian countries. The ISOPA data was derived from a survey which utilized an anonymous questionnaire targeting specialists treating osteoporosis in the 9 countries. The Malaysian data was compared with other Asian countries for 7 of the 10 original questions in each questionnaire, which included availability of DEXA scan, clinical criteria for initiating osteoporosis treatment, selection of medication for specific patient groups and reasons to discontinuation of medication. Of the 1,034 feedbacks received from 9 countries, 121 were from Malaysia; of whom a majority was Orthopaedic surgeons (47%). DEXA scan was available for diagnosis only to 58% respondents; low bone density was most important reason for initiating treatment (89%); cost (63%) & side effects (55%) were the important reasons for discontinuing medication by patients; the three top most features for choosing anti-osteoporotic agent were cost-effectiveness (70%), prevent fracture (70%) and increase BMD (68%). Compared to Malaysia, the figures were generally lower in Myanmar and South Korea and higher in China and Singapore. The Malaysian results were comparable with the overall Asian results in most aspects of Osteoporosis treatment. There is scope for improvement both for diagnosis and treatment.

Abstract no.: 28822

IN VITRO STUDY OF OSTEOPENESIS OF RABBIT'S LIGAMENTUM FLAVUM CELLS: THE EFFECT OF RECOMBINANT HUMAN BONE MORPHOGENETIC PROTEIN-2 ENCAPSULED IN PHOTO-RESPONSIVE HYDROGEL

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INTRODUCTION: Osteogenesis of the ligamentum flavum (LF) is a extensively recognized pathophysiologic factor in spinal stenosis. In our previous studies, human ligamentum flavum cells can express osteogenesis with a recombinant human bone morphogenetic protein (rhBMP-2) tether photo-responsive hydrogel. Before clinic application, a good animal mode (rabbit) should been developed. **MATERIAL and METHODS:** The rabbit's ligamentum flavum (rLF) tissue was obtained from New Zealand White Rabbit. The rLF tissue specimens were digested with type 1A collagenase. RhBMP-2 was conjugated to polyethylene glycol (PEG). Two 1×10^6 cells/construct groups were prepared, included rLF cells encapsulated in no BMP-2 (Control group) and in PEG-tethered rhBMP-2 (BMP-2 group). A 80-□I aliquot of cell□polymer□photoinitiator solution was subsequently loaded into disk-shaped molds with a 6-mm internal diameter, followed by photopolymerization with 365 nm UV light to gelate the cell□polymer constructs. The constructs were incubated with culture medium DMEM for 1, 14 and 28 days. Alkaline phosphatase activity, DNA content and histology of constructs will be evaluated for the evidence of osteogenesis. **RESULTS AND DISCUSSION:** Alkaline phosphatase activity of rLF cells in BMP-2 group increased with time and was higher than those in control group. In histology assay, higher calcification in BMP-2 group than those in control group was observed at 1, 14 and 28 day. Rabbit's ligamentum flavum cells in BMP-2 group had shown potential for osteogenesis.

Abstract no.: 28826

DO WE KNOW THE ANATOMIC TIBIAL AND FEMORAL FOOTPRINT OF THE ANTERIOR CRUCIATE LIGAMENT? A CADAVER STUDY

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Study aim: Recent findings by Petersen, Zantop and our own study group could prove, that superior clinical outcome after reconstruction of the anterior cruciate ligament (ACL) is correlating with anatomical placement of the graft. The authors measured 3 dimensional CT scans with assumed anatomic footprints and correlated their findings with clinical outcome. Our aim was to verify these assumed footprints on human cadaver knees in order to strengthen previous findings. **Methods:** Thirty human cadaver knees were conserved and dissected according to the technique by Thiel. The tibia was photographed on a strict cranio-caudal view and the femur on a 45 degrees inwards rotated posterior-anterior view. The photographs were printed and measured using a 2 dimensional coordinate system (X and Y coordinate). The midpoint of the tibial and femoral footprint of the ACL was measured on this coordinate system. In case of macroscopic double-bundles the midpoint of these two bundles was measured. Findings were compared to the published data. **Results:** The mean value of the measured tibial and femoral footprint of the ACL on 30 human cadaver knees was T (5.2; 5.6) tibial and F (3.0; 3.5) femoral. These findings could verify the assumed values of Petersen, Zantop and our own study group. **Conclusions:** The assumed anatomic tibial and femoral position of the ACL is appropriate. The results of this cadaver study support previous anatomic assumptions.

Abstract no.: 28828

SEX-RELATED OUTCOME DIFFERENCES AFTER LOW-CONTACT-STRESS TOTAL KNEE ARTHROPLASTY WITH A MINIMUM FOLLOW-UP OF FIVE YEARS

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Objective: The objective of this study was to evaluate the clinical and radiological outcome of Low-contact-stress mobile-bearing total knee prosthesis (LCS) at a minimum follow-up of 5 years with respect to sex-related differences. **Patients and methods:** One-hundred and twenty-six Low-contact-stress (LCS) total knee replacements were evaluated at minimum follow-up of 5 years with respect to the WOMAC score, Knee society score, and the active range of motion (ROM). Radiological evaluation was performed using digital X-rays in 3 axes. **Results:** At minimum follow-up of 5 years 34 male and 90 female patients were evaluated. Male patients had a mean age of 75 years, a WOMAC score of 32.1 points (0 to 84) and a mean KSS score of 80.6 for pain (0 to 100) and 59.9 (0 to 100) for function. The mean active range of motion was 95.7 degrees with a range from 5 to 140. Ninety female patients had a mean age of 79 years, a mean WOMAC score of 24.9 points (0 to 85), and a mean KSS score of 83 points (0 to 100) for pain and 70.05 points (0 to 100) for function. The mean active range of motion was 95.5 degrees with a range from 20 to 135. None of these differences reached statistical significance. **Conclusion:** Female and male patients do not significantly differ in terms of clinical outcome, pain analysis, active range of motion, or radiolucencies after implantation of a LCS prosthesis with a minimum follow-up of 5 years.

Abstract no.: 28829

PREDICTION OF HAMSTRING TENDON AUTOGRAPH LENGTH AND DIAMETER WITH RESPECT TO PATIENT'S ANTHROPOMETRIC CHARACTERISTICS

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Study design: Observational study; **Level of evidence** 2 **Key words:** Hamstring tendon, length, diameter, and anthropometry. **Introduction:** Quadrupled hamstring autograft is commonly used in the anterior cruciate ligament (ACL) reconstruction. The prediction of length and diameter of hamstring (gracilis & semitendinosus) tendon has implication in decision of tunnel length and fixation device. The aim of study was to determine whether simple anthropometric measurements such as height, body mass index (BMI), ASIS-joint line distance can be used to accurately predict the length and diameter of hamstring tendons for ACL reconstruction surgery. **Methods:** Prospective observational study was conducted on 39 consecutive patients undergoing ACL reconstruction using quadrupled semitendinosus-gracilis autograft from January 2010 to September 2010. Data included anthropometric measurements (age, height, weight, BMI, ASIS-joint line). Hamstring diameter was obtained using cylindrical sizers in 1-mm increments and recorded in the standardized proforma. Correlation coefficients (Pearson r) and stepwise multiple linear regression were used to determine the relationship between the outcome variable (hamstring graft length and diameter) and the predictor variables (age, height, BMI). **Results:** Hamstring graft diameter was only related to ASIS- medial joint line distance ($r = .429$, $P < .001$ but was not related to BMI, age, and height ($P > .05$). From the current data, a regression equation was calculated; graft diameter = $3.394 + 0.09 \times$ ASIS-MJ line distance in cm. **Conclusion:** Of the parameters studied, ASIS-medial joint line distance was the best predictor of quadrupled hamstring tendon diameter.

Abstract no.: 28831

TIBIAL STRESS SHIELDING IN LOW-CONTACT-STRESS MOBILE-BEARING TOTAL KNEE ARTHROPLASTY

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Background: Previous authors reported the appearance of radiolucent lines (RLL) immediately or two years after primary implantation of Low-contact-stress (LCS) mobile-bearing total knee prosthesis. RLL are radiolucent intervals between the cement/ implant and the adjacent bone, which are caused by imperfect tibial cuts or excessive micromotions. Whilst investigations proved RLL to be more frequent in cementless TKA, their correlation to clinical findings and patients discomfort and knee pain is still unknown.

Patients and Methods: Five hundred and sixty-six Low-contact-stress (LCS) total knee replacements were screened for patients suffering from continuous moderate knee pain. We compared tibial stress shielding classified by Ewald in patients suffering from pain with an age and sex matched control group without any knee pain. **Results:** Twenty-eight patients suffered from continuous knee pain in total. Radiolucencies were detected in 27 of these patients and in six out of 28 matched patients without knee pain. We could demonstrate a significant correlation of knee pain and the appearance of radiolucencies. Radiolucencies appeared significantly more frequently in the most medial and most lateral tibial plateau. **Conclusion:** In case of no further specified pain after implantation of the LCS prosthesis, radiolucencies should be suspected as another possible cause. The appearance of radiolucencies might be minimized by implanting cemented tibial plateaus.

Abstract no.: 28832

EFFICACY OF TRANEXAMIC ACID IN DECREASING BLOOD LOSS DURING AND AFTER TOTAL KNEE ARTHROPLASTY SURGERIES IN OSTEOARTHRITIS: A PROSPECTIVE STUDY

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Level of Evidence: Level I, Prospective randomized case control study **Key words:** Tranexamic acid, Total Knee Arthroplasty **OBJECTIVE:** To establish the significance of Tranexemic Acid in minimizing the intraoperative and postoperative blood loss in Total Knee Arthroplasty. **METHOD:** 99 subjects were included in the study. In 50 subjects Tranexamic acid was given in a total of 2 doses; first dose 1 hour before surgery, second dose was given 6 hours after the first dose. Other group of 49 subjects did not receive Tranexamic acid injections. A comparison was drawn between the 2 groups based on the Haemoglobin values before surgery and after surgery and drain output. **RESULTS:** Administration of Tranexemic Acid reduces intra and postoperative bleeding by almost 40% in patients undergoing Total Knee Arthroplasty. **CONCLUSION(S):** Administration of Tranexemic Acid reduces intra and postoperative bleeding by almost 40% in patients undergoing Total Knee Arthroplasty. Hence the use of Tranexemic Acid injection in Total Knee Arthroplasty Surgeries can be considered as an effective method to control and minimize the blood loss during Total Knee Arthroplasty Surgeries. Prophylactic use of Tranexemic acid also provides an effective, safe, and economic method for reducing blood loss during and after Total Knee Arthroplasty surgeries as it reduces the need for intraoperative and postoperative transfusion of blood and blood products by preventing blood loss thereby significantly reducing the cost of treatment, avoids transfusion related adverse effects.

Abstract no.: 28834

SIZE OF TKR COMPONENTS AND POST OP BLOOD LOSS

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In this retrospective study, we examine the relationship between component size in primary TKR and blood loss. All primary TKR with measured preoperative values and day one postoperative values were included. The average drop in haemoglobin and haematocrit compared to the preoperative values was 21%. In this study, there was a direct correlation between femoral component size and the drop in haemoglobin values. There was a direct relationship between the size of the femoral component and the drop in these values. The femoral component sizes of 2, 2.5, 3, 4 and 5 showed drops in haemoglobin of 14%, 20%, 20%, 23% and 26% respectively. Haematocrit values showed similar trends. In comparison to this, when the tibial components were analysed, sizes of 2, 2.5, 3, 4 and 5 had a haemoglobin drop of 21%, 15%, 21%, 26% and 24% respectively, which lacked direct correlation unlike the femoral side. Our study indicates that larger the size of the femoral component, the amount of blood loss is more. This could be a useful indicator to assess amount of blood loss during TKR and help in counselling of patients with cardiac or preoperative anaemic patients or Jehovah's Witness and options like autotransfusion drains could be discussed.

Abstract no.: 28836

UNSUCCESSFUL OUTCOME OF UNTREATED MINOR KNEE TRAUMA

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BACKGROUND: Untreated minor knee injury may play an important role in cartilage defects appearance, but little is known about its natural outcome. **MATERIALS AND METHODS:** In this study, 31 patients (19 women and 12 men) with untreated minor knee injury and residual knee pain were undergone knee arthroscopy in the hospital of Vitebsk State Medical University. Knee cartilage defect grade was determined using Outerbridge classification. **RESULTS:** All patients had history of minimal trauma and hadn't any special treatment or medical supervision. The patient's group average age was 33.9 ± 5.2 years (24-43 years). Average post-injury term was 2.7 ± 1.6 years (1-8 years). Knee cartilage defects were detected in all patients, but there was no any other internal knee structures (meniscus, ACL) injury. Grade 2, 3 and 4 patella cartilage lesion were revealed in 16 (51.6 %), 10 (32.3 %) and 5 (16.1 %) cases respectively. Cartilage defects of medial condyle articular surface were detected in 24 (77.4 %) patients, furthermore in 17 cases it was 3-4 grade. 6 (19.4 %) patients had grade 2 to 3 lateral condyle cartilage lesion. Patellar and condylar osteochondral defects both were revealed in 5 (16.1 %) patients. **CONCLUSION:** Minor knee trauma without treatment may cause significant articular cartilage lesion. To determine an early cartilage damage signs and to update knee injury treatment protocol more studies are needed.

Abstract no.: 28845

TREATMENT OF MID-SHAFT FEMORAL FRACTURES IN PATIENTS WITH PREVIOUS DYNAMIC HIP SCREW (DHS) FIXATION

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Introduction: When revising a DHS, removal of the lag screw can pose problems in terms of difficulty and risk of iatrogenic fractures. This is because the lag screw is not reverse-cutting and therefore a large torque is generated which can lead to such fractures.

Materials and Methods: We report on a series of five cases (from 2006 to 2010) in patients sustaining mid-shaft femoral fractures that we treated with an intra-medullar (IM) retrograde nail. These patients already had a DHS in situ in the same limb. Our surgical technique was to leave the lag screw in situ and only remove the screws from the DHS plate. **Results:** The average time of radiological follow-up of our patients was 95 days. All patients had a successful insertion of a retrograde IM nail with was locked both distally (using 1 or 2 screws) and proximally (using 1 to 3 screws). 2 patients developed post-op complications. The first patient had 2 out of 3 screws that were used for the distal locking of the nail, protruding under the skin and they were removed 20 days post-op. The second patient represented a complex case, where initially a 10-hole DHS replaced a failed 2-hole DHS, which was then again replaced by a retrograde nail. The retrograde nail failed within the first post-op month. **Conclusions:** We recommend this technique as a safe and effective method to reduce the risk of iatrogenic fractures. To avoid complications, the nail should be inserted using the correct technique.

Abstract no.: 28848

WHAT MATERIAL IS MOST SUITABLE TO FILL BONE DEFECTS IN PROXIMAL TIBIA FRACTURES

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For the period between 2007 and 2010 we have operated 121 proximal tibia fractures. The majority of patients had B3.1 (54), C3.1 (49) and C3.3 (8) fractures according to the AO-ASIF classification. 112 of the patients were operated by ORIF with the use of LCP (PTP), 4 fractures were stabilized by external fixation and in 5 patients minimally invasive reduction and fixation with screws was performed. In 80% (97) of all the cases filling of bone defects required. Variety of materials was applied that can be grouped as following: injectable bone substitute (Norian SRS) and structured materials (auto-, bospho-, allo-, xeno- bone and bone substitutes). Structured materials were used if required for reduction of the fractures. Most common they were applied in the cases of impression of the central part of the articular surface. Filling of bone cavities with injectable bone substitute (Norian SRS) is performed after osteosynthesis, so it was used when reduction and fixation of bone fragments was possible with metal implants (plates, screws, wires). Definitive stabilization was performed by injective filling of complex shape defect. The use of Norian SRS is reasonable in impression and displacement of posterior part of articular surface, where conventional implants can't stabilize the fracture sufficiently and in marginal defects. Norian SRS is ideal for puncture filling of bone defects after minimally invasive reduction. The use of different types of materials allowed us in all the cases to stabilize bone fragments in proximal tibia fractures and to start early kinezotherapy (3-4 days after surgery). We observed secondary displacements in 4 patients (3%) in the late period after surgery as a result of avascular necrosis after ORIF.

Abstract no.: 28851

THE ROLE OF THE IMMUNE SYSTEM IN THE CASES OF UNSUCCESSFUL JOINT REPLACEMENT

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In many cases it is a rather difficult task to reveal the causes of the early (less than 4 years after the operation) aseptic loosening and the osteolysis around prostheses components. As a rule, we usually blame the implant insertion technique, the individual features of our patient and others. However, we argue that the immune system of a particular patient might play an important role in success or in failure of the joint replacement. We have been taking the specific tests since the middle of 2010 for an allergy (IgE) and for the hypersensitivity (IgG) to the following metals: Co, Cr, Mo, Al, Ti, Ni. There were nine patients examined with the early aseptic loosening of the total hip prostheses components (5 – titan alloys, 4- CoCrMo). There were no positive answers to the IgE tests. Nevertheless, there was a positive result in the tests using IgG: three cases for Ni, two cases for Co and one for Al. We cannot be absolutely sure that this particular matter caused the loosening of the implants, but even such a small number of patients we have examined so far encourage us to continue further investigations. We are planning to introduce this kind of tests to all our patients before their routine surgery which is dealing with the large metalworks insertion. This concerns both the primary and revision joint replacement and the spinal surgery.

Abstract no.: 28854

**THE EVOLUTION OF MUKHERJEE'S SHOULDER HEMIPROSTHESIS
FOR INDIAN SCENARIO**

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The evolution of Mukherjee's shoulder hemiprostheses was to design a prosthesis which is anatomically and biomechanically suitable for Indian patients. Introduction the existing design of shoulder hemiprostheses is not suitable for Indian bones which are morphologically different from the bones of caucasian people of the Western world. Materials and Methods: 1 Cadaveric study for anatomical parameters of Indian proximal humerus. To determine of diameter of humeral heads, the head shaft inclination, the diameter of the proximal medullary canal of humerus the anatomical retroversion of the humeral head. 2 Drawing and design of a new shoulder hemiprostheses based on cadaveric study the design specification identified,understanding the biomechanics during embodiment of the designed hemiprostheses 3 Construction of a new shoulder hemiprostheses Spherical head, stem, medial offset and lateral offset, head stem components are held at an angle of 125 degree. The cross section of the stem component is substantially triangular. The medial offset has a flat base. the angle between lateral offset and the stem is maintained at 15 degree 4 Invitro insertion of the prosthesis and radiological matching For Calcar Seating, Head shaft angle, Retroversion, Medialisation of prosthetic head & Snugly fitting inside the medullary cavity 5 The Biomechanical study of a new shoulder hemiprostheses To construct a fabricated shoulder joint and its biomechanical study alongwith detail force and movement analysis. Discussion: On the basis of Indian cadaveric study average humeral head size - 41mm (33mm - 51mm), average head shaft angle-125 degree (115-135), average diameter of proximal humeral medullary canal - 9 mm (8-12mm), average anatomical version - 30 degree retroversion (25 - 40), a new shoulder hemiprostheses was fabricated which is anatomically and biomechanically suitable for Indian patients Conclusions: To conclude Mukherjee's patented shoulder hemiprostheses is viable option for replacement of proximal humerus for the Indian scenario.

Abstract no.: 28858

EXPERIENCE OF SIGN NAILING IN DIFFICULT FRACTURES AND COMPLICATIONS

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Surgical stabilisation of difficult fractures of long bones and associated injuries is in demand. Sign project started in Kolkata, India in the year 2002. Since then 201 fractures were treated. Left side was 90, right side was 111. Antegrade femur – 41, antegrade humerus – 21, retrograde femur – 41, tibia – 98. Closed fractures were 186 and 15 were open fractures (ag-i: 7, ag-ii: 3, ag-iiia : 3, ag-iiib : 1, ag-iiic: 1). So far 170 cases were treated closed and 31 cases by open reduction. Previous implant used ex-fix in 3 cases, ilizarov in 1 case, im nail in 4 cases and plate in 5 cases. Maximum nail used with length 280mm, 300 mm and 320 mm and the maximum nail of diameter 8mm, 9mm and 10 mm were used. The difficult fractures encountered in the above series were either biomechanically, biologically or medically difficult to treat. In the list we have biomechanically difficult fractures : isolated fractures combined fractures biologically difficult fractures : open fractures b. Fractures associated with closed degloved, impending compartmental syndrome - medically difficult fractures : a. Fracture associated with medical complications b. Fractures associated with other injuries /trauma c. Cerebral palsy these aforementioned difficult fractures were treated by sign nail and they comprise around 30 percent of the total series. With the judicious, biomechanical and biological use of this technically sound sign nail even the aforementioned difficult fractures were battled out but there were complications too which are listed below : • malunion • delayed union - • nonunion • shortening • joint stiffness • infection • bend nail • nail breakage • nail backout • knee pain. To conclude, sign nailing technique is simple, easy, fast & easily reproducible by an average orthopaedic surgeon for treating difficult fractures.

Abstract no.: 28860

**OUTCOMES OF METACARPOPHALANGEAL JOINT REPLACEMENTS
CARRIED OUT IN A SEVEN-YEAR PERIOD**

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Introduction: Since November 2003 there have been 62 Metacarpophalangeal Joint (MCPJ) replacements carried out on 16 patients at Macclesfield District general hospital. 11 of the patients were female and 5 were male. The average patient age at the date of the procedure was 64.9 years of age, with an age range of 28 to 80. Of the 62 MCPJ replacements carried out, 58 were as a result of rheumatoid arthritis, with only 4 as a result of osteo-arthritis. The primary objective of this study is to assess their outcomes to date.

Method: Data was collected retrospectively by means of case note review. Outcomes measured were patient rating of pain and function at post operative review, as well as post operative complications. All operations were carried out by a single surgeon using his standard operative technique and all replacements used the Neuflex Finger Joint Implant System. **Results:** All 16 patients attended for post-op review. At the time of discharge 13 patients rated their outcome as excellent to good, 1 patient was deceased and 2 patients are currently under follow up with no complications. Of the total 62 joints replaced, 10 revisions were carried out. Of these, 3 are as a result of dislocation, 6 are for subluxation and 1 as a result of failure of the prosthesis. There were 3 other post operative complications. One was for superficial wound infection, 1 resulting from a prominent prosthesis and 1 hypertrophic scar. **Conclusion:** From the data available we conclude that 81% of patients rated their outcome at discharge as good to excellent.

Abstract no.: 28868

**LUXATIO ERECTA HUMERI WITH AXILLARY ARTERY THROMBOSIS
– A RARE CASE REPORT AND REVIEW OF LITERATURE**

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A very rare and serious complication with shoulder dislocation is a lesion to the axillary artery. This specific complication is seen in the elderly population, where vascular structures have become less flexible. Axillary artery injury secondary to inferior shoulder dislocations is very rare, especially in the young peoples. Proper recognition and treatment of this entity offers a full recovery to the patient. Present report highlights the possibility of axillary artery injury with inferior dislocation of the shoulder. The available literature on this injury is based on the few case reports and small case series. This has been reviewed and recommendations for management have been brought up to date, in line with current thinking. Keywords: shoulder dislocation; arterial thrombosis.

Abstract no.: 28872

TRUE CONGENITAL DISLOCATION OF SHOULDER: A CASE REPORT

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Dislocation of shoulder joint in infancy is extremely rare and is usually the result of traumatic birth injuries, a sequel to brachial plexus injury or a true congenital dislocation of shoulder. With more advanced obstetric care, the incidence of first two types has drastically decreased. We report a case of true congenital dislocation of shoulder, second of its kind, in a child who was delivered by Caesarean section thereby negating any influence of trauma. We report the case because of its rarity and review the available literature on this topic. We also discuss the management options when encountered with such a rare case scenario.

Abstract no.: 28877

UNUSUAL COMPLICATIONS IN FEMORAL LENGTHENING FOR PROXIMAL FEMORAL DEFICIENCY – OUR SURGICAL EXPERIENCE OF 10 CASES

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Background: To describe various complications which occurred during femoral lengthening in proximal focal femoral deficiency [PFFD]. **Methods and Results:** 10 children with proximal focal femoral deficiency were treated by femoral lengthening with the help of external fixator and illizarov system supplemented by osteotomies for correction of deformity at our institute. Apart from the complications routinely observed like pin tract infection fracture at the pin site, the following complications were seen: persistence of varus deformity, which was corrected by plating in 3 cases, in 3 cases we observed pin loosening and loss of fixation in proximal fragment and malunion, which were again treated by intra medullary fixation. In 3 cases there was dislocation of the knee joint while lengthening which was reduced. **Conclusions:** we have to be aware about the complications that can arise during femoral lengthening for PFFD and how can they be best avoided and treated, if they do occur.

Abstract no.: 28880

CONVERSION OF ETS TO BIPOLAR HEMIARTHROPLASTY: SHOULD WE TEMPLATE X-RAYS BEFORE EXETER TRAUMA STEM HEMIARTHROPLASTY OF HIP?

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Background: Intra-capsular fracture of neck of femur is very common injury in elderly population. Exeter Trauma Stem (ETS) hemiarthroplasty is a cemented, tapered, polished, collarless prosthesis. We noticed that during femoral shaft preparation on many occasions femoral canal was too narrow for ETS and surgeon had to use different prosthesis.

Methods: We reviewed retrospectively all patients who were listed for Exeter Trauma Stem Hemiarthroplasty in our hospital in years 2006-2008. We reviewed theatre notes and pre and post-operative X-Rays of all patients as well as our hip fracture audit database.

Results: We identified 380 patients. In 34 cases (9%) femoral shaft was too narrow to allow appropriate rasping and preparation for ETS prosthesis, and surgeon was forced to change prosthesis to bipolar hemiarthroplasty (CPT, Zimmer). This was associated with prolonged anaesthetic and operative time and higher cost of surgery. 4 of patients who had bipolar hemiarthroplasty (12%) suffered early dislocation and instability of the hip and required revision surgery (2 patients had Total Hip Replacement, 2 patients had Girdlestone procedure). Only 1 patient who had ETS arthroplasty suffered post operative dislocation. All patients had X-Rays taken and stored electronically using GE Healthcare IT-PACS system. Measurements of femoral canal, both pre and post-operative, were inconsistent and did not reflect true canal dimensions. This was likely caused by electronic X-Ray magnification. **Discussion:** We noticed significant conversion rate from ETS hemiarthroplasty to other prosthesis due to narrow femoral canal. This was associated with high complication rates, disturbed theatre work and significantly increased cost of procedure. We believe, this could have been avoided if templating X-Rays were taken preoperatively and true measurement of femoral canal dimensions was possible.

Abstract no.: 28883

HOFFA SYNDROME - UNDER-DIAGNOSED CONDITION AFFECTING THE KNEE

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Background: Hoffa syndrome is a common cause of anterior knee pain in active individuals. It is caused by fat pad injury or impingement. We describe the history, examination, arthroscopic findings and outcome of treatment of 38 consecutive patients with above diagnosis in our institution. **Methods:** We identified 38 patients who had arthroscopy of knee and found to have Hoffa Syndrome. We reviewed clinical notes and arthroscopy records of those patients and assessed the clinical outcome and complications. **Results:** Male to female ratio was 27:11. The age varied from 15 to 55 years. In 30 cases there was a clear history of injury. Duration of symptoms prior to arthroscopy varied from 3 weeks to 18 months. All patients complained of anterior knee pain. Most consistent examination finding were: infra-patellar tenderness (95%), reduced extension (92%), quadriceps wasting (48%). MRI showed inflammatory changes within fat pad in 3 cases only. All patients had diagnosis confirmed during arthroscopy and had arthroscopic Hoffa's fat excision. 4 patients were found to have complete ACL rupture, but only 2 required subsequent reconstruction. Patients were followed up for a mean period of 6 months. 33 patients fully recovered and returned to sport activities, 2 patients still undergoing physiotherapy following ACL reconstruction. 3 patients did not improve. **Conclusion:** In our study we showed that Hoffa Syndrome may be difficult to diagnose, as signs and symptoms are not specific and the condition is often missed on MRI scanning. We highlighted its natural history and we proved that arthroscopic treatment is effective and safe.

Abstract no.: 28887

DYSPHAGIA AND AIRWAY COMPROMISE AS A RESULT OF RETROPHARYNGEAL HAEMATOMA FOLLOWING NOT DIAGNOSED ODONTOID PEG (C2) FRACTURE. A CASE STUDY

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Background: Airway compromise following cervical spine injury is an unusual cause of respiratory distress. The following case reveals an unusual presentation of an undiagnosed and previously asymptomatic cervical spine fracture. **Case Report:** We describe history of 89 years old male patients, who was previously fit and healthy. Patient had a fall 7 days prior to admission to our institution, when he suffered minor head injury. He did not complain of neck pain at the time and was discharged from emergency department without any imaging. Patient re-presented 7 days later feeling generally unwell with signs of chest infection. He developed dysphagia, dysarthria within 48 hours of admission. Nasal endoscopy revealed very oedematous retropharyngeal area. Patient underwent computed tomography (CT) and magnetic resonance (MRI) scanning of the neck, which demonstrated type 2 fracture through the junction of the odontoid peg and body of C2. There was associated surrounding haematoma and soft tissue oedema, largest in the retropharyngeal region. Patient's condition deteriorated and he required intubation and ventilation. As retropharyngeal oedema was not improving following 7 days, patient had percutaneous tracheotomy. Retropharyngeal swelling settled within 3 weeks, the patient had an uneventful tracheostomy removal. His cervical fracture was treated conservatively with a Miami-J collar. The patient has made a good recovery. **Discussion:** Airway compromise following cervical trauma or fracture is rare, but may lead to devastating consequences. As presented in this case report, cervical fracture can result in mechanical airway compromise with associated retropharyngeal haematoma and pre-vertebral soft tissue oedema. Swelling may develop several days after injury. In elderly patients with minor history of falls one should always think of possible fracture and appropriate investigations should be carried out. Retropharyngeal haematoma secondary to cervical spine fracture required prompt multidisciplinary approach and appropriate management of both airway and cervical spine.

Abstract no.: 28888

EFFICACY OF THE SAUVÉ-KAPANDJI PROCEDURE FOR POSTTRAUMATIC CHRONIC DISORDERS OF THE DISTAL RADIOULNAR JOINT

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Sauvé-Kapandji operation is a salvage procedure for chronic disorders of DRUJ. The Sauvé-Kapandji procedure consists of an arthrodesis of the distal radioulnar joint (DRUJ) in combination with an intentional pseudarthrosis of the distal ulna. Fourteen patients (all male, average age 26 years) underwent Sauvé-Kapandji procedure and were followed up 38 months after the operation (range, 17-42 months). Fractures of the distal aspect of the radius can result in posttraumatic osteoarthritis, chronic instability, and subluxation or dislocation of the distal radioulnar joint, leading to pain and limitation of rotation of the forearm. As a reason for DRUJ instability and chronic pain we found, severe contusion and distortion trauma 5 patients, distal radial fracture 9 patients. Pain assessment was performed with a visual analogue scale (VAS 0 - 100) pre- and postoperatively. For evaluation of grip strength dynamometer was used. The Modified Mayo Wrist Score was used in all patients for subjective outcome assessment. Postoperatively all patients experienced relief of pain. Rotation of the forearm increased to near normal values. Grip strength by 71,4 % (15 to 24,8 kg) compared preoperative to postoperative. Five patients had an excellent result, seven had a good result, one had a fair result and one had a poor result. The Sauvé-Kapandji technique is a reliable procedure to treat posttraumatic chronic problems of the distal radioulnar joint, resulting in high patient satisfaction and improvement in range of motion. Key words: Sauvé Kapandji, wrist pain, distal radioulnar joint instability.

Abstract no.: 28889

TREATMENT OF FOREARM DEFORMITIES OF MULTIPLE HEREDITARY EXOSTOSIS (MHE) BY JOSHI'S EXTERNAL STABILIZATION SYSTEM (JEES)

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Treatment of forearm deformities of multiple hereditary exostosis (MHE) by Joshi's external stabilization system (JEES) Abstract Growth disturbance in osteochondroma overwhelms and retards the growth of any closely associated physis resulting in tethering effect on paired structures. Material & Methods: Five children having forearm deformities of MHE(type-2B deformity-Masada classification)were operated for indications of Painfull radial head dislocation & parental concern of deformity using JESS distracter , later ulna fixation with DCP (2.7-3.5) under GA -lateral/supine position -4 cm vertical incision over proximal ulna-corticotomy site under fluoroscopy control. JESS distracter was applied with 2proximal-2distal k-wires; After 7 days gradual distraction was started at 1mm per day 4- sets till 3wk then 1mm per day-2 sets till radial head relocates after which distraction was stopped. Stability of reduction was checked in flexion and extension and reduction was fixed with capiteloradial k-wire. Ulna was fixed, capiteloradial k-wire was removed after 3wks. Serial xrays taken preop-postop -7 days postop-10 days postop-then weekly till plating-then once per 3 weeks-total workup period 12-16 wks. Discussion: advantages and conclusion: Previous operatives include Z osteotomy, lengthening of ulna, distal radial osteotomy involving extensive dissection and may require bonegraft later. 1) JEES is a well tolerated, light weight, cheap, gradual. Biological method utilizing principles of distraction histiogenesis with Indian instrumentation to observe reduction and dynamic radial head stability with patient's cooperation, 2) With proper distraction protocol ulnar lengthening, stable radial head relocation, union at corticotomy site was achieved in all cases and bonegraft not required in subsequent cases.

Abstract no.: 28890

**DELAYED DIAGNOSIS OF TRAUMATIC HIP DISLOCATION MIMICKING
PERTHES DISEASE IN A CHILD: A CLINICAL REMINDER**

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Background: Avascular necrosis that follows trauma results from a tear and resultant division of the vasculature around the hip, yet the mechanism which underpins Perthes disease of the hip is unknown. The radiological appearance in both is similar with initial flattening and sclerosis of the epiphysis, progressing to fragmentation with later reossification. **Case report:** We report a case of a relatively trivial trauma resulting in hip dislocation in a 5 year old boy. This case is useful in highlighting that (a) Hip dislocation may occur in children with relatively trivial mechanisms (b) Knee pain often indicates an underlying hip pathology and (c) Traumatic avascular necrosis follows a similar course to Perthes disease and therefore may be management should be tailored in a similar manner to achieve containment within the acetabulum. **Conclusion:** This case is a clinical reminder and emphasizes traumatic avascular necrosis of the hip in children should be treated as one would treat Perthes disease – with the necessary interventions to achieve ‘containment’.

Abstract no.: 28891

MEDIAL PATELLO FEMORAL LIGAMENT RECONSTRUCTION USING QUADRICEPS GRAFT FOR PATELLAR INSTABILITY: MINIMUM 1-YEAR FOLLOW-UP RESULTS

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INTRODUCTION: Injury to Medial Patello Femoral Ligament (MPFL) is currently considered as a primary patho-anatomy in patellar dislocations. MPFL accounts for nearly 53% of the medial soft restraint for patella and many studies have shown improved patellar tracking and reduced re-dislocation rates after MPFL reconstruction. Many reconstruction techniques have been described and we report the outcome of MPFL reconstruction using a quadriceps graft. **PATIENTS AND METHODS:** A prospective study was done to assess the outcome of MPFL reconstruction using quadriceps graft. All patients with MPFL reconstruction with or without distal realignment procedure were considered to be included. MPFL reconstruction was done using superficial strip of quadriceps by an anteromedial incision and attached close to medial epicondyle of femur. Tibial tuberosity transfer using Fulkerson's technique was performed only in patients with increased 'Q' angle. Patients were assessed using Lysholm and Kujala scores. **RESULTS:** There were 9 knees in seven patients with a mean age of 22.8 years. All patients had MPFL reconstruction and 5 tibial tuberosity transfer. With a mean follow-up of 19.7 (12-30) months, the mean pre-op Kujala scores improved from 49 (SD:5.87, 95% CI: 45.1 – 52.8) to 87.8 (SD: 10.1, 95% CI: 77.7 – 97.9). The mean Lysholm scores improved from 54.2 (SD: 7.36, 95% CI: 49.4-59) to 88.2 (SD: 12.6, 95% CI: 79-95.4). According to Lysholm scores 3 patients had excellent, 5 good and 1 fair results. None of the patients had patella re-dislocations. **CONCLUSION:** MPFL reconstruction with quadriceps graft appears to produce good results in patients with patellar instability.

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Abstract no.: 28892

SYNOVIAL PLICAE OF THE KNEE: OUR EXPERIENCE OF DIAGNOSIS AND TREATMENT

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Synovial plicae are the normal parts of the knee joint, which, however, may lead to pain syndrome in case of its trauma or idiopathic inflammation. During the period from October 2005 to July 2010 on the basis of traumatological-orthopaedic departments of 6th city clinical hospital of Minsk we analyzed 349 knee joint arthroscopies in 333 patients ante 45 years old (middle age was 23,1 year). Among patients pathologic synovial plicae syndrome (PSPS) was verified in 13 cases (3,9 %). Middle age of patients with this pathology was 16,7 years old (range 14-24 years). There were 6 female and 7 male patients, 6 left and 7 right knees. In 5 cases PSPS was accompanied with chondromalacia of articular surfaces of 1-2 grade, in 5 cases – with old meniscal or ACL injuries and, finally, in 4 cases – with chondral fractures of patellofemoral joint (1 patient - with lateral patellar hyperpression syndrome). As a rule patients were complain of anterior knee pain, increasing in physical activity, painful clicks during movement in the joint, not always they could associate beginning of the symptoms with trauma. Among operated patients in 2 cases was revealed pathologic suprapatellar synovial plica (its partial dissection performed), mediapatellar plica – in 11 patients (in 7 cases its partial or total dissection performed, in 3 cases – its partial resection). In postoperative period all patients marked decreasing or disappearing of pain syndrome and improvement of knee joint function. There were no complications.

Abstract no.: 28893

EVERTOR MUSCLE ACTIVITY AS A PREDICTOR OF OUTCOME IN NEUROGENIC CLUBFEET TREATED BY THE PONSETI METHOD

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Introduction: Clubfoot relapse continues to be a problem when treating both idiopathic and “neurogenic” clubfoot with the Ponseti method. Previous studies identified risk factors for recurrence in idiopathic clubfoot. The clubfoot in neuromuscular disorders presents additional challenges: no risk factors for recurrence have yet been identified. This study aimed to ascertain whether evertor activity could predict recurrent deformity. **Materials and Methods:** From 2005-2010, data was collected prospectively on 21 consecutive patients (34 “neurogenic” clubfeet). Patient characteristics, including severity of initial deformity, previous treatment, age at treatment initiation, cast number, compliance with brace and qualitative evertor muscle activity were studied in relation to recurrence rates. **Results:** The mean Pirani score at presentation was 5.2. All feet obtained primary correction with 100 % Achilles tenotomy rates. Compliance with the brace was absolute in all but one patient. At mean follow up of 35 months, deformity relapse was noted in 11 feet (32%) in six patients. No significant correlation was found between severity of initial deformity, previous treatment, age at treatment onset, or number of casts required. A significant correlation was found between poor evertor activity and relapse rate. **Conclusion:** Following “neurogenic” clubfoot correction, the only identified factor correlating with relapse rates was evertor muscle activity. **Significance:** Risk factor identification for recurrent deformity allows clinicians to anticipate problems and devise early interventions to improve muscle balance around the ankle. Similar information is currently being analysed in idiopathic clubfeet.

Abstract no.: 28894

ARTHROSCOPIC ASSESSMENT AND CLASSIFICATION OF MENISCOID LESIONS OF THE ANKLE

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INTRODUCTION: Meniscoid lesion is a band of hyalinised connective tissue formed due to fibrotic inflammation of the synovial membrane in the ankle. It is commonly found in athletes and is reported to happen after inversion sprain of the ankle. It is infrequently recognised as a cause of ankle impingement syndrome and we present a series of patients with meniscoid lesion of the ankle and propose a classification system for the first time based on the morphology and site of location. **PATIENTS AND METHODS:** Between May 2003 and Jan 2010, nearly 120 patients underwent ankle arthroscopy by a single surgeon at two different hospitals. Of them, 16 patients were found to have meniscoid lesions of the ankle. There were 7 females and 9 males with an average age of 41.1 (22-63) years. Almost all patients had previous history of trauma. Intra-operative stress views were done in 13 patients. Type 1 meniscoid lesion between the talus and the inferior tibiofibular joint laterally was present in 12 patients. Type 2 meniscoid lesion in the medial gutter was present in 3 patients. Type 3 meniscoid lesion containing a loose body near inferior tibiofibular joint was present in 1 patient. In all patients treatment included arthroscopic debridement of the meniscoid lesion. **CONCLUSION:** It is important to recognise meniscoid lesion as a cause of ankle impingement as it responds well to arthroscopic debridement. A universal classification system may be useful to improve the awareness and documentation of this condition. This would enable to find the true incidence of this condition, as it currently appears to be underreported.

Abstract no.: 28895

PERTROCHANTERIC FRACTURES TREATED WITH A GAMMA 3 NAIL

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Introduction: Pertrochanteric fractures have been treated successfully with the use of a dynamic hip screw over the last decades. Intramedullary nailing has gained popularity as this procedure is associated with lower risk for postoperative morbidity and faster recovery of function. **Material:** We conducted a single-center study including 62 patients (13 men and 49 women, mean age 80 ± 10 years) with pertrochanteric fractures treated with a Gamma 3 Nail. The patients were followed clinically up to 12 months postoperatively and we assessed range of motion of both hips, leg length, Harris Hip Score and Body Mass Index (BMI). The centrum-collum-diaphyseal (CCD) angle and the grade of osteoarthritis were evaluated radiographically. **Results:** Hip motion of the injured hip was significantly worse after 12 months compared to the uninjured side. According to the Harris Hip Score 43 patients (67%) had excellent or good results. There was no significant difference at the average CCD angle between both hips at follow-up. The average osteoarthritis score increased significantly for the injured hip, whereas the osteoarthritis score for the uninjured hip did not change. AO/OTA classification subgroups representing the severity of the fracture did not influence the development of osteoarthritis; BMI scores did not correlate with the development of osteoarthritis either. Revision surgery rate was 5%. **Discussion:** Despite accurate reduction and stabilization pertrochanteric fractures have a substantial effect on the development of osteoarthritis. Further multi-center trials with higher case load estimation should focus on quality of life to evaluate the relationship between clinical and radiological outcome.

Abstract no.: 28896

OUR EXPERIENCE OF OPERATIVE TREATMENT OF THE KNEE JOINT'S PATHOLOGY IN YOUNG PATIENTS

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The purpose of the current report is to describe main knee joint pathology among young patients. During the period from October 2005 to December 2010 on the basis of 6th city clinical hospital of Minsk we performed 392 operations (17 open and 375 arthroscopies) on knee joint at 368 patients (223 boys and 145 girls) ante 30 years old (middle age of patients was 17,8 years - range 2-30 years). 253 patients (68,8 %) marked trauma of knee joint in the anamnesis. The basic types of pathology demanding operative intervention on knee joint were the followings: 1) Injuries of meniscuses and ligaments (46,5 %), 2) synovitis of various genesis (15,2%), 3) chondral and osteochondral fractures (12,8 %), 4) chondromalacia of various grades (9,2%), 5) Koenig disease (5,4 %), 6) congenital anomalies of meniscuses (4,6%), 7) chronic patellar instability, hyperpression syndrome (4,3 %), etc. Majority of cases of chondral and osteochondral fractures were observed at younger patients while damages of meniscuses or ligaments were observed mainly at older patients. At 31 % of cases the diagnosis established by arthroscopy completely has not matched with preoperative diagnosis. The most difficult in diagnostics were chondral and osteochondral fractures, masked by symptoms of meniscal injuries. In 12 cases after diagnostic knee joint arthroscopy open operations were performed (70,6 % of open interventions) on conditions that adequate arthroscopic correction of existing pathology was impossible. In postoperative period all patients marked decreasing or disappearing of pain syndrome and improvement of knee joint function.

Abstract no.: 28903

OUR EXPERIENCE OF SURGICAL TREATMENT OF HUMERUS CONDYLE FRACTURES (TYPE C IN CLASSIFICATION AO/ASIF) WITH DECOMPRESSION OF THE ELBOW JOINT IN ADULTS

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We analyzed the long-term results (12 months - 10 years after operation) of surgical treatment of 48 adult patients treated from 2000 to 2009 inclusive, with comminuted intraarticular fractures of humerus condyle (type C on the classification of AO/ASIF). Fractures in 3 patients were classified as type C1, in 9 cases - as the type C2, in 36 cases - as the type C3. The patients' age ranged from 18 to 80 years, the average age of the patients – 45,7 years. There were nine men and thirty-nine women. 5 fractures were open, 43 - closed. Patients with open fractures were operated on the same day; the other patients were operated during the period from 2 to 17 days after injury. Due to the nature of the comminuted fractures, osteosynthesis was performed in 34 cases with help of the wires or wires in combination with screws, in 14 cases osteosynthesis performed with help of plates. According to the evaluation system of Jupiter et al. (1985), excellent treatment results were obtained in 21 patients (43,8 %), good - in 20 patients (41,7 %), satisfactory in 5 (10,4 %), poor in 2 (4,2 %). Thus, the excellent and good functional results of treatment were achieved in 85,4 % of cases.

Abstract no.: 28905

OSTEOCHONDRITIS DISSECANS OF THE PROXIMAL TIBIA: UNUSUAL LOCATION AND SUCCESSFUL OUTCOME AFTER SURGICAL TREATMENT

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INTRODUCTION: Osteochondritis dissecans (OCD) is a well known condition in which a portion of the subchondral bone and the overlying articular cartilage is partially or fully separated. Involvement of the concave articular surfaces like proximal tibial plateau is rare. We present a case of OCD of proximal tibial plateau and the successful outcome after surgical intervention **PATIENT AND METHODS:** A 15-year-old boy presented with 3 months history of pain and lump over the medial aspect of the knee. Clinical examination revealed normal knee alignment, a firm to hard tender lump medially attached to the underlying proximal tibial plateau and almost full range of movement. Radiographs showed a calcific spot within the lump and an MRI scan suggested evidence of osteochondral injury of the medial tibial plateau with some displacement and surrounding cystic changes. An arthroscopy was performed which confirmed an unstable sub-meniscal osteochondritis dissecans. A mini-arthrotomy was performed and as the OCD was fragmented and unstable, it was excised. The crater was freshened and micro-fracture carried out to encourage cartilage growth. Post-operatively patient was making good progress with physiotherapy and at latest follow-up 6 months post-op, he had regained full range of knee movements and was able to return to normal sporting activities. **CONCLUSION:** We suggest that proximal tibial OCD should be considered in the differential diagnosis of a juvenile/adolescent patient with localised knee swelling and mechanical symptoms.

Abstract no.: 28906

PROSPECTIVE RANDOMISED STUDY OF ANKLE BLOCK IN FOREFOOT RECONSTRUCTION – DOES TIMING MATTER?

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Aim: Forefoot surgery causes postoperative pain which requires strong painkillers. Regional blocks are now increasingly used in order to control postoperative pain especially in the first twenty four hours when the pain is at its worst. We conducted a study to see whether timing of ankle block i.e. before or after application of tourniquet shows any difference in efficacy in postoperative analgesia in first twenty four hours.

Material and Methods: A randomised prospective study was conducted between September and November 2010 involving 50 patients (Two groups containing 25 patients each). Group A had the Ankle block applied after and Group B had the Ankle block applied before application of tourniquet. Patients were given assessment forms to chart their pain and were assessed using a pain VAS at 4hrs and 24 hrs after surgery.

Results: Both groups demonstrated good postoperative pain control. Average pain score at four and twenty fours after surgery was 2.5 and 5 in Group A and 3.5 and 6.1 in Group B respectively. Pain was controlled better both at 4 and 24 hours postoperatively in Group A but this was not statistically significant.

Conclusion: A Regional Ankle block should be routinely used in forefoot surgery to control postoperative pain. The operating surgeon should perform the ankle block after the application of tourniquet as this provides better pain control.

Abstract no.: 28908

CASE REPORT: SOLOMON SYNDROME ASSOCIATED WITH HYPOPHOSPHATEMIC VITAMIN D-RESISTANT RICKETS

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Background: Solomon syndrome is a congenitally acquired disorder characterized by a epidermal nevus in association, most commonly, with skeleton, neurological and ocular abnormalities. It occurs as a lethal sporadic dominant autossomal mutation, only allowed to survive as a mosaic. The association with hypophosphatemic vitamin D-resistant rickets is extremely rare. **Method:** We describe the case of a female toddler with an extensive, right-sided epidermal nevus present since birth, to whom Solomon syndrome was diagnosed at twenty-two-month-old in the sequence of an observation for an abnormal gait. Serum analysis revealed hypophosphatemia (together with phosphaturia), normocalcemia and elevated alkaline phosphatase levels, which together with imaging studies indicated hypophosphatemic rickets. Treatment with increasing doses of oral phosphorus and calcitriol was initiated with clinical, laboratory and radiologic improvement. **Discussion:** Solomon syndrome is a rare syndrome. The association with hypophosphatemic vitamin D-resistant rickets is extremely rare, with only around twenty cases reported in worldwide literature. This presentation serves to enhance the awareness of this rare condition, pointing out the importance of appropriate laboratory tests in children with an extensive epidermal nevus, with or without additional signs of skeletal involvement, in order to early diagnose, treat and prevent late complications of hypophosphatemic vitamin D-resistant rickets.

Abstract no.: 28909

DIFFICULTIES IN SURGICAL TREATMENT OF OLD FULL-THICKNESS ROTATOR CUFF INJURIES

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Introduction: Problem of surgical treatment of old full-thickness rotator cuff injuries is one of the most important/the topical question/ in the modern traumatology. Material and method: Carrying out this work, we evaluated prospectively results of surgical treatment of old full-thickness rotator cuff injuries (according to Makarevich, Beletsky classification). From 2003 to 2009, 56 patients with rotator cuff tear were operated using 4 different methods. There were 48 (85,7%) males and 8 (14,3%) females, aged 22-60 years old (mean 59.9 years old). Mean duration of follow-up was 23,6 months (range 6 to 60 months). All the patients underwent MRI and CT preoperatively for determination the extent of soft tissue and bone injuries. 44 (78,6%) patients were treated using mobilization of injured tendons and muscles with following their reinsertion or suture, 5 (8,9%) patients underwent Makarevich plastic, 3 (5,4%) – underwent Augereau-Apoil, 4 (7,14%) – underwent Debeyre. In most cases we were able to mobilize tendons and accomplish their suture and reinsertion by transosseous sutures directly to the humeral head. However, in some cases, the severity of cicatricial process in the tendon determinated the selection of one of the ways of plastic replacement of the defect. Preoperative and postoperative clinical assessments were performed with the Oxford score and Rowe rating scale for shoulder. Result: The results were excellent in 8 (14,3%) patients, good in 20 (35,7%), fair in 13 (23,2%) and poor in 15 (26,8%) cases. Our investigation showed that usage of these surgical techniques provides positive clinical effects.

Abstract no.: 28911

BASIC PRINCIPLES OF MUSCULOSKELETAL ULTRASOUND

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The topic will give short and complete overview of basic principles of musculoskeletal ultrasound examination not only for the beginners, but for the physicians with skills also. The specificity of musculoskeletal ultrasound is in requirement on excellent spatial resolution. The topic will define the most important contribution, which must be fulfilled by examination: working frequencies, focusing, post-processing, main gain and depth of imaging. On examples from praxis will be demonstrated the influence of these contributions on quality of pictures, with comments and recommendations how to do the images better. The topic will also give the overview about the new technical solutions and software possibilities and its contribution for improvement of examination results, for example: harmonic imagine, contrast agents, texture analysis, 3-D reconstructions offline and on-line and some more. Together with new technologies, the risk for misinterpretation grows. So the last part of presentation analyzes the possible errors coming from artefacts and bad presets of units, gives the guidelines for elimination most frequently errors by preset of unit and gives some practical tips for excellent imaging on both simple basic and high-end ultrasound units – mostly on examples from authors own praxis.

Abstract no.: 28920

LENGTH OF HOSPITAL STAY AS PART OF THE ENHANCED CARE FOR PRIMARY HIP ARTHROPLASTY

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Introduction: Enhanced care in joint replacement requires identification and correction of the causes of delay in discharge while ensuring practice remains safe. We conducted prospective studies of the factors delaying discharge following hip replacement in 2006 and 2010. **Methods:** Daily data was collected prospectively in 100 consecutive primary cemented THR, by an independent observer. Reasons for delays in discharge and variation from the patient pathway were identified and addressed. **Results:** The mean length of stay (LOS) in 2006 was 4.3 days (target: 4 days) and in 2010, 3.56 days (target: 3 days). In 2006, 31 patients had a stay of more than 4 days, 17 due to inadequate physiotherapy provision, 10 for medical and 4 for other reasons. In 2010, 29 patients had a stay of more than 3 days (though only 15 stayed longer than 4 days), 2 patients had inadequate physiotherapy provision, in 7 cases discharge was delayed because of need for blood transfusion and 11 because of need for catheterisation. Women, aged more than 70 with preoperative haemoglobin of less than 12 g/dL were at particularly high risk of requiring transfusion ($p=0.0001$). Catheterisation was also identified as a factor causing significant increase in LOS. Patients going home in less than 3 days were more likely to have had their operation in the morning. **Discussion:** Patient LOS is multifactorial and can be reduced by regular review of the care pathway to effect incremental changes that have a significant impact on reducing stay.

Abstract no.: 28921

FRACTURE TO FIXATION: THE 36-HOUR COUNTDOWN IN THE MANAGEMENT OF HIP FRAGILITY FRACTURES

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Presently we treat 70,000 hip fractures per annum in the United Kingdom. However the European Commission predict this figure will increase to 1 million within the European community by 2050. In view of these figures the Department of Health in the United Kingdom introduced 'Best Practice Tariffs' in April 2010 for the treatment of Hip Fragility Fractures. English trusts now have a financial incentive to meet all quality metrics involved in these patients care. A key element in their management is ensuring their operation is performed within 36 hours of presentation. Over a three month period we recorded all hip fragility fractures in a district general hospital. The time from presentation to surgery was determined and the reasons for delays and cancellations documented. Changes were then implemented according to our findings to optimize patient care. We give an overview of the Best Practice Quality Metrics in treating hip fragility fractures in the United Kingdom and present our experience in managing them.

Abstract no.: 28922

**CONGENITAL ASYMPTOMATIC NON FUSION OF THE ANTERIOR ARCH
OF C1 IN AN ADULT**

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Congenital absence of the anterior arch of C1 is incredibly rare, with only 2 previously reported cases in the literature. We present the third case of a medically fit patient who suffered neck trauma with an abnormal odontoid peg radiograph, which subsequently demonstrated a congenital non fusion of the anterior vertebral arch of C1 on CT scan. This case highlights the need to have an open diagnosis to include congenital anomaly when interpreting abnormal odontoid peg radiographs. The case also demonstrates stability of the anterior vertebral arch of C1 despite non fusion. This may provide clinical insight in to the permissibility of conservative management of acquired fractures at this level.

Abstract no.: 28923

REVIEW OF HIP ARTHROSCOPY - FUNCTIONAL OUTCOME

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Aim: To assess the functional outcome of hip arthroscopy procedures done by a single surgeon over a period of 2 years at our District General Hospital. Methods and materials: Retrospective review of 18 hip arthroscopy procedures with a mean duration of follow up of 13 months (6 to 23 months). The functional outcome was measured by WOMAC and Oxford hip scores. Results: 18 hip arthroscopies (9 males and 9 females) with a mean age of 39 years (21 to 62 years). 72 % cases had Degenerative labral tear with acetabular chondral damage. 22% cases had isolated labral tear. Cam lesion was seen in 17 % cases. 8 cases (44%) had labral tear repair and 8 cases had debridement. We lost post op follow up of one patient. 10 cases (59%) had good pain relief. 6 patients (35%) had no pain relief, among them 4 patients eventually required Hip Resurfacing Arthroplasty. One patient had partial relief of symptoms. The mean WOMAC hip score has improved from 44 points pre op to 60 points post op and mean Oxford hip score has improved from 22 points pre op to 30 points post op. The Unpaired t test has proven that both score improvements were statistically significant. Among the 8 cases which had labral tear repair 6 had complete pain relief and one case had partial pain relief. Only 3 out of 8 debridement cases (37%) had good results. 50% of debridement cases eventually required hip resurfacing arthroplasty. We have successfully avoided all major post operative complications including traction neuropraxia. Discussion: Our series of hip arthroscopy has demonstrated 88 % good results in labral tear repair. Debridement of degenerative chondral/labral damage was only effective in 37 % cases. Conclusion: Hip arthroscopy is a safe and effective treatment option for labral tear.

Abstract no.: 28927

INFLUENCE OF PERIPHERAL NERVE BLOCK ON LENGTH OF STAY IN PRIMARY CEMENTED TOTAL KNEE REPLACEMENT

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Background: Length of stay (LOS) for primary total knee arthroplasty (TKA) is affected by a number of factors. Peripheral nerve block is a widely popular method to achieve early post op analgesia in limb surgery. The present study is conducted to evaluate the performance of peripheral nerve blocks in primary TKA and its influence of average LOS. **Methods:** A prospective study is conducted including all the primary TKA from October 2010 to January 2011. 26 cases were included in the study. All the cases received nerve blocks in the region of femoral and sciatic nerve distribution. The patients were examined prospectively in the early post operative period. Clear documentation regarding the recovery from the block was done. All cases underwent standard post operative rehabilitation programme and discharged after achieving standardised Multi Disciplinary Team criteria. **Results:** 21 patients recovered from the effect of peripheral nerve block on the post operative day 1 and 5 patients recovered on post operative 2. Median LOS for patients who recovered on post operative day 1 was 4 days with inter-quartile range (IQR) of 4 days to 5 days and median LOS for patients who recovered late was 5 days with IQR of 5 to 7 days. Statistical analysis demonstrated that there was no significant difference between the 2 groups ($p=0.114$). **Conclusion:** Peripheral nerve block is an effective modality of achieving short term analgesia in early post operative period in primary TKA. Delayed recovery from the block delays the rehabilitation but does not necessarily prolong LOS.

Abstract no.: 28930

DOES ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION IN THE SKELETALLY IMMATURE CAUSE GROWTH DISTURBANCE? A SYSTEMATIC REVIEW

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Introduction: Anterior cruciate ligament rupture in the skeletally immature can present a dilemma. The options are early surgical reconstruction to prevent chondral and meniscal damage, but may cause growth disturbance due to physeal damage, or delay reconstruction until physeal fusion to prevent growth disturbance. We carried out a systematic review of the literature to see if acl reconstruction with an open physis caused any growth disturbance. **Methods:** We surveyed PUBMED using the search terms “anterior cruciate ligament OR acl reconstruction and skeletally immature” and “anterior cruciate ligament OR acl reconstruction and children”. Inclusion criteria were limited to original clinical research articles involving humans that were published in the English language and had a follow up of at least 24 months. Exclusion criteria included reviews, case reports, non English language literature and studies not involving the transphyseal procedure. **Results:** We retrieved 11 retrospective level 4 evidence studies which fulfilled our criteria. This involved 263 skeletally immature knees. Age range 7- 14. There were 2 patients with growth disturbance and 261 without any growth disturbance. Follow up ranged from 27 months – 108 months. **Conclusion:** Transphyseal acl reconstruction has so far been demonstrated as minimally causing growth disturbance. It should therefore not be a deterrent for reconstruction.

Abstract no.: 28931

SAFETY AND EFFICACY OF TRANEXAMIC ACID IN CONTROL OF BLEEDING FOLLOWING KNEE ARTHROPLASTY

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Introduction: We studied the effect of two standardised intravenous bolus doses of 500 mg of Tranexamic Acid, a fibrinolytic inhibitor, on blood loss following Knee Arthroplasty (KA).

Methods: One hundred single surgeon consecutive patients undergoing primary cemented KA, who received two standardised bolus doses of 500mg of Tranexamic Acid were included. First dose was administered at induction and second dose was administered just before wound closure. Data, which included haemoglobin (Hb), haematocrit (Hct), length of hospital stay (LOS) and complications, was collected prospectively by an independent observer. Routine blood tests were done on the 2nd post-operative day. **Results:** Mean patient age was 69 years. Mean LOS was 4.73 days with a standard deviation (SD) of 3.07 days. The mean drop of Hb was 2.04 g/dl (15.5%) with an SD of 0.89 g/dl. The mean drop of Hct was 0.096 (16.7%) with an SD of 0.033. Only 2 patients developed symptoms of anaemia and were transfused with 2 units of blood each. A total of 10 patients, who complained of calf pain or swelling of the lower limb postoperatively were investigated with ultrasound scan for possible DVT. The diagnosis of DVT was confirmed in 3 patients. **Conclusions:** We believe that the use of two standardised intravenous bolus doses of 500mg of Tranexamic Acid reduces peri-operative blood loss, the need for blood transfusion and the need for postoperative drains. We did not notice any increase in thromboembolic complications in our study.

Abstract no.: 28935

TRAUMATIC CALCANEOCUBOID DISLOCATION WITH COMPARTMENT SYNDROME OF FOOT

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A 27 year old lorry driver admitted with injury to right foot. Clinical and radiological examination suggested fracture dislocation of calcaneocuboid joint. He subsequently developed compartment syndrome of foot within 6 hours while waiting for CT scan, a rare presentation, which was successfully decompressed and stabilised by open reduction and internal fixation. The presentation and management of this rare condition are discussed. Introduction – Calcaneocuboid fracture dislocations with foot compartment syndrome are uncommon orthopaedic injuries. These dislocations are rare because of the inherent stability of the joint, conferred by the surrounding ligaments, fibrous capsule, bony architecture, and proximity to the peroneus longus tendon and saddle shape of its articular surfaces. Very few traumatic dislocations have been reported in literature. The exact mechanism is unknown. They involve high energy trauma or inversion planter flexion injuries. A specific varus stress radiological technique for the calcaneocuboid joint has been developed. We describe a case of traumatic calcaneocuboid fracture dislocation and discuss the management of in this condition and related complications. Our report of calcaneocuboid fracture dislocation with compartment syndrome is, to our knowledge, the first in literature. Discussion – Calcaneocuboid joint has good stability and cuboid is a rigid and static stabiliser of the lateral column of the foot. It is only bone to articulate with both midtarsal and tarsometatarsal joints. Articulations and reinforcement by multiple ligamentous, tendinous and soft tissue attachments give the cuboid marked stability. Therefore these fracture dislocations are uncommon. There have been only a few subsequent reports of calcaneocuboid fracture dislocations during 37 years. Open reduction and internal fixation gives good results in these fracture dislocation. High index of suspicion is needed for their diagnosis.

Abstract no.: 28938

EVALUATION OF CHANGEABILITY OF THE STEM ANTEVERSION ANGLE OF THE TAPERED WEDGE STEM USING THE COMPUTER SIMULATION

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The purpose of this study is to determine how many degrees of the stem anteversion could be changed intentionally when the tapered wedge stem (TWS) was implanted into the femur. The TWS was virtually implanted into the 40 femora on the preoperative planning workstation of the CT-based Navigation system. The CT data of 10 men and 30 women with an average age of 64 years (24-86) were used. The diagnoses were hip dysplasia in 20 (Dysplasia), the contralateral hip of the femoral neck fracture, infection, arthritis, and osteonecrosis of the femoral head in 20 (Normal). The optimal fit position of the stem was as follows: the stem axis was parallel to the femoral intramedullary axis within one degree of error, and the stem anteversion was set to direct the medial side of the stem for the narrowest point of the calcar. The anteversion and the flexion angle of the stem were changed on the workstation keeping the endosteal fit of the stem without breaking the proximal femoral cortex. The maximum and minimum anteversion of the stem were recorded. According to the endosteal shape of the calcar in the axial images, femora were classified into two types as 'Triangular' in 25, and 'Oval' in 15. The average optimal, maximum, and minimum stem anteversion was 25.3 (5-66), 41.9 (15-90), and 11.9 (-14-40), respectively. The average changeable anteversion angle was 30.1 (9-63). No significant difference in anteversion changeability was found between the Dysplasia and Normal. The 'Oval' femora showed significantly greater changeability than the 'Triangular' ones ($p<0.0001$). This study showed that the TWS could be implanted with various anteversions. Conversely, surgeons should take great care of missing the intended anteversion, which could result in instability.

Abstract no.: 28939

FAILURE OF A MODULAR PRIMARY HIP IMPLANT

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Modular total hip prostheses that have independent interlocking head, stem and neck components offer potential advantages of being able to adjust offset, anteversion, and leg length once the stem has been placed. One of the disadvantages to these systems is the increased number of interfaces with more potential for wear and subsequent failure. We report a case series of implantation of 54 primary modular stems resulting in two catastrophic failures. A 65 year old female had a primary modular replacement of her right hip in 2003 who initially did well, but following a motor vehicle collision several months later had persistent right hip pain that ultimately lead to failure of the prosthesis 4 years after the index surgery. The second patient is a 45 year old mechanic who had a well functioning right THA for 6 years until 1 month prior to revision. Persistent right hip pain led to severe acute hip pain after a near fall. Radiographic and later surgical exploration revealed a failure at the neck stem junction similar to the previous case.

Abstract no.: 28941

**TIBIAL FIXATION WITH FOUR SCREWS IN CEMENTLESS PS TKA
COATED HYDROXYAPATITE**

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Introduction: The purpose of this study was to evaluate the effect of screw fixation of tibial component in cementless PS TKA radiologically. **Patients and Methods:** The implant of total knee arthroplasty (TKA) was Scorpio system (Stryker orthopedics. Mahwah. NJ) for cementless posterior stabilizer type coated hydroxyapatite. 128 knees fixed the tibial component without screw and 125 knees fixed the tibial component with four screws were studied radiologically. We evaluated appearance ratio, width and region of radiolucent line (over 1mm) under the tibial component, quantified in three zones across the anteroposterior and lateral view of the implant. Additionally we explored the rate of migration or loosening of the tibial component in each group. **Results:** Radiolucent lines were seen in 44 (34.3%) knees in screwless group and 13 (10.4%) knees in four screws group. In screwless group, there were 11 (8.6%) knees which showed migration and 4 (3.1%) knees of loosening in the tibial component. In four screw group, there was only 1 (0.8%) knees which showed migration and no case of tibial loosening was seen. **Discussion and Conclusion:** The tibial component fixed with four screws showed significantly better results radiologically than screwless component. This implant was coated hydroxyapatite and has an advantage of bony ingrowth. However it is reported that there is severe stress concentration around posterior stabilizer, additional screw fixation is desirable for the better early stability.

Abstract no.: 28942

FEEDING-RELATED PEPTIDES IN THE HYPOTHALAMUS IN CACHECTIC AND ADJUVANT ARTHRITIC RATS

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Feeding behavior is known to change in cachectic and arthritic animals. Appetite and feeding behavior is primarily controlled by feeding center/satiety center in the hypothalamus. In the hypothalamus, there are several potent feeding-regulating peptides such as orexigenic peptides (neuropeptide Y (NPY), agouti-related protein (AgRP), orexin) and anorexigenic peptides (proopiomelanocortin (POMC), cocaine- and amphetamine-regulated transcript (CART), corticotropin releasing hormone (CRH)). In the present study, we examined the expression levels of the feeding-regulating peptides in the hypothalamus in the cachectic and adjuvant arthritic rats. Interestingly, the expressions of the orexigenic peptides genes were up-regulated and the anorexigenic peptides genes were down-regulated in the hypothalamus of both cachectic and arthritic rats. These results suggest that anorexia may be caused by not only the hypothalamic regulation but also extra-hypothalamic regulation.

Abstract no.: 28946

WHETHER GLENOPOLAR ANGLE CHANGES AFTER CLAVICLE ALONE FIXATION OF BIPOLAR DISLOCATION?

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Background: The floating shoulder is defined as ipsilateral fractures of the midshaft of the clavicle and the neck of the scapula, although ligamentous injuries are also considered in it. While acceptable results can be expected with non-operative management of minimally-displaced fractures, displacement at one or both sites is best managed with surgical reduction and fixation. **Methods:** A prospective study was conducted from July 2007 to October 2010. We studied a total of 25 patients of floating shoulder with follow up ranging from 24 months to 36 months, and an average follow up of 30 months who were managed with conservative as well as surgical fixation. Patients were followed up to 30 months as average with the help of X-rays at regular interval and the clinical outcome was measured using Hercoviscie scoring system and measurement of glenopolar angle. **Results:** 13 patients were managed conservative, 10 had operative treatment and 2 were lost to follow up. Road traffic accident was the most common cause of floating shoulder injury in our series. Shoulder stiffness was the main complication found in our patients. Patients in the surgical group scored better than the conservative group in all the 4 quality of clinical outcome scoring system used (Hercovisci et al). Glenopolar angle doesn't changed significantly compared to normal limits. **Conclusion:** Fixation of the clavicle gives excellent results and provides better clinical outcome and quality of life comparable to conservatively managed patients, with early mobilization and return to activity. Also no major variation was seen in glenopolar angle measurement.

Abstract no.: 28947

SUBCORACOID IMPINGEMENT AFTER THE FIXATION OF THE FRACTURED CORACOID PROCESS - A CASE REPORT

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Subcoracoid impingement resulting from abnormal contact between the anterosuperior humerus and the anterior coracoacromial arch represents an uncommon source of anterior shoulder pain. Certain operative procedures can also alter the relationship between the coracoid and lesser tuberosity, leading to impingement of the intervening soft tissue, including the subscapularis and bursa. We describe the unique case of subcoracoid impingement with tear of subscapularis tendon after the internal fixation of the fractured coracoid process with cannulated screw due to crowding the coracohumeral space. Arthroscopic removal of the screw and repair of the subscapularis in our patient resulted in successful resolution of his symptoms. Although subcoracoid impingement is a rare cause of shoulder pain, failure to diagnose and treat this condition may represent a significant cause of failed shoulder surgery.

Abstract no.: 28950

INTRA-ARTICULAR FIBROMA OF THE TENDON SHEATH IN THE SHOULDER - A CASE REPORT

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Fibroma of tendon sheath is an uncommon benign soft tissue tumor with a predilection for the hand and intra-articular involvement is extremely rare. It is comprised of slow-growing fibrous lobules made up of scattered fibroblasts in a dense stroma with slit-like vascular channels. A unique case in 54-year-old male patient involving the glenohumeral joint arising from posterosuperior glenoid labrum is reported. Magnetic resonance imaging (MRI) reveals focal nodular mass adjacent to posterosuperior labrum with low signal intensity in the mass on T1- and T2-weighted images. The tumor was marginally excised under the arthroscopic control. These tumors should be considered in the differential diagnosis of intraarticular soft tissue masses during shoulder arthroscopy.

Abstract no.: 28951

EARLY RESULTS OF LCP FIXATION WITH INFRACLAVICULAR APPROACH IN BIPOLAR DISLOCATION

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Background: The floating shoulder is best managed with surgical reduction and fixation with different surgical technique using various types of implant. It is defined as ipsilateral fractures of the midshaft of the clavicle and the neck of the scapula, although ligamentous injuries are also considered in it. While acceptable results can be expected with operative management but still there is controversy about surgical approach and type of plates.

Methods: A prospective study was conducted from July 2007 to October 2010. We studied a total of 10 patients of floating shoulder with follow up ranging from 24 months to 36 months, and an average follow up of 30 months who were managed with surgical fixation with Infraclavicular approach preserving cutaneos nerves. Locking Compression Plate non contoured were used in all cases. Patients were followed up to 30 months as average with the help of X-rays at regular interval and the clinical outcome was measured using Hercoviscie scoring system and measurement of glenopolar angle. **Results:** 13. 10 had operative treatment with this infraclavicular surgical technique. Road traffic accident was the most common cause of floating shoulder injury in our series. Shoulder stiffness was the main complication found in our patients. Patients in the surgical group scored better than the conservative group in all the 4 quality of clinical outcome scoring system used (Hercovisci et al). **Conclusion:** Fixation of the clavicle alone with LCP gives excellent results and provides better clinical outcome and union rate describe with other fixation methods. Very early mobilization and return to activity is possible. Also no metal protusion/palpation noted in any of patients.

Abstract no.: 28952

CLINICAL RESULTS OF ARTHROSCOPIC SINGLE- OR DOUBLE-LAYER DOUBLE ROW ROTATOR CUFF REPAIRS

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Purpose: To evaluate the functional and anatomical results of arthroscopic single- or double-layer double row repair. Materials and Methods: From March 2006 to October 2008, 48 shoulders (31 males, 17 females; mean age 57.6 years; 45-68) were included who underwent arthroscopic double row repair for full-thickness tears of the rotator cuff following conservative treatment for a mean of 6.5 months (range 4-11). Mean rotator cuff tear size was 2.8 cm and the tendon-to-bone fixation technique varied according to the presence of delamination in that separate fixations of superficial and deep layer were used. Functional and structural evaluations were made according to the ASES, UCLA scale, isokinetic strength testing and MRI. The mean follow-up was 22 months (range 18-33). Results: The average clinical outcome scores and strength were all improved significantly at the time of the final follow-up. Forty-four patients (91.6%) were satisfied with the result of the treatment. Delamination was observed in 15/48 shoulders (31%) and it extended proximally and posteriorly in the majority of shoulders. In 23 of 29 patients (79%) were judged to reveal healed tendon on MRI and double-layer double row repairs in delaminated tears resulted in nearly same rate of structural integrity to single-layer double row repairs. Conclusions: Delamination is frequently associated with full-thickness rotator cuff tears and our results document the usefulness and variability of arthroscopic double row rotator cuff repairs.

Abstract no.: 28953

THE RELATIONSHIP OF BODY MASS INDEX AND THE ACCURACY OF CUP POSITION USING IMAGELESS NAVIGATION IN TOTAL HIP ARTHROPLASTY

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Purpose: The purpose of the study is to evaluate the relationship between the body mass index (BMI) and the accuracy of the cup position in THA performed using imageless navigation. **Materials and Methods:** We analyzed the cup position of the cementless THAs using imageless navigation (BrainLAB, Heimstetten, Germany) in consecutive 100 hips. The registration was done using manual pointer based probe. They were divided into 2 groups: Group I (n=71) with BMI < 25 and Group II (n=29) with BMI > 25. The average age and BMI were 54.9 years (range: 20 - 87) and 23.3 (range: 12.8-29.5) respectively. The concept of combined anteversion was applied in cup positioning. The cup position was evaluated by the radiograph and CT. **Results:** The average inclination and anteversion of all the patients were $43.3^\circ \pm 4.2^\circ$ and $21.9^\circ \pm 5.1^\circ$, respectively. The average inclination and anteversion were, respectively, $43.6^\circ \pm 4.3^\circ$ and $22.0^\circ \pm 5.5^\circ$ in group I; $42.9^\circ \pm 4.0^\circ$ and $21.8^\circ \pm 3.7^\circ$ in group II. There was no statistically significant difference in anteversion ($p=0.78$) and inclination ($p=0.47$) between two groups. There were no outliers in anteversion and inclination in both groups. **Conclusion:** Imageless navigation seems to be useful in accurate cup positioning. BMI did not influence the accuracy in imageless navigation for THA in patients with BMI less than 30. Due to unavailability of obese patients with BMI over 30 in this study, further study is required.

Abstract no.: 28954

ARTHROSCOPIC REPAIR OF TRAUMATIC SUBSCAPULARIS TENDON TEAR

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Purpose: To report the clinical results of repair of isolated traumatic tears of the subscapularis tendon. Materials and Methods: Fifteen patients (13 males, 2 females; mean age 46.2 years; range 35 to 52) with unilateral ruptures of the subscapularis tendon after trauma who underwent arthroscopic repair between February 2003 and October 2008 were reviewed retrospectively. All the cases were isolated tears of the subscapularis without the involvement of any other rotator cuff tendon and were followed for at least two years (mean 28 months). The preoperative and postoperative status of patients with isolated subscapularis tears were analyzed using the Constant Score, American Shoulder and Elbow Society Index (ASES Index) and postoperative integrity was determined through magnetic resonance imaging. Results: The average clinical outcome scores and strength were all improved significantly at the time of the final follow-up. The constant shoulder score improved from 41.5 to 81.3 points ($P=0.017$) compared to before surgery and ASES index improved from 46.4 to 89.6 points ($P=0.023$) postoperatively. Thirteen patients (87%) were satisfied with the result of the treatment. The total tears were significantly more improved by surgery than the partial tears ($p< 0.001$). In 12 of 15 patients (80%) were judged to reveal healed tendon on magnetic resonance imaging at a mean of 13 months postoperatively. The postoperative score was significantly lower for the patients with a failed repair than it was for those with an intact repair ($p< 0.001$). Conclusion: Repair of traumatic isolated subscapularis tears through arthroscopic techniques effectively restores patient function with regard to pain, mobility, strength and postoperative tendon integrity. The postoperative integrity of the repair correlates with the functional results and the total tears were significantly more improved by surgery than the partial tears.

Abstract no.: 28956

ENDOSCOPIC-ASSISTED CURETTAGE OF BRODIE ABSCESS IN PROXIMAL TIBIA - A CASE REPORT

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We report a case wherein a unique surgical technique was used to treat a deep-seated Brodie abscess in the proximal tibial metaphysis by endoscopic assisted curettage with ACL femoral targeting device (Rigid Fix; Mitek, Johnson & Johnson, Norwood, MA). By means of this approach, easy and accurate targeting, visualization and debridement of the lesion were possible in 48-year-old male patient. At 16 months' follow-up, there has been no recurrence. This technical modality may be indicated in cases of infection or tumorous conditions to prevent regional contamination or neurovascular injury. Key words: Proximal tibia, Brodie abscess, endoscopic-assisted curettage

Abstract no.: 28960

**POPLITEAL CYSTS AND BAKER CYSTS, ARE THEY SYNONYMS?:
MAGNETIC RESONANCE IMAGING STUDY OF POPLITEAL CYSTS**

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Abstract: Objective: To differentiate Baker cysts from popliteal cysts of non Baker type, with magnetic resonance (MR) imaging and furthermore to be helpful in choosing the appropriate treatment methods of popliteal cysts. Material and Methods: We analyzed serial 59 patients (61 knees) with symptomatic popliteal cysts. All patients attended for routine MR imaging of the knee with a variety of clinical presentations. With MRI findings, we tried to divide the popliteal cysts into Baker type cysts and non-Baker type cysts. Inter- and intraobserver reliability was statistically analyzed by using kappa statistics. Finally, the correlations between the type of cysts and surgical methods were analyzed using the Fisher exact test. Results: The authors were able to categorize all the popliteal cysts into two morphologic patterns, based on the location of the cysts. Out of 61 consecutive cases with popliteal cysts, 51 cases (84%) were classified as Baker type cysts. The other 10 cases (16%) were classified as non Baker type cysts. Intra-observer reliability was 0.83 in terms of kappa statistics, which implies almost perfect agreement. Mean interobserver reliability (0.70) showed substantial agreement. Arthroscopic cystectomy performed in the Baker type cysts (100%) more frequently than in the non Baker type cysts (0%). Conclusions: Preoperative magnetic resonance imaging can categorize popliteal cysts into two patterns (Baker and non Baker type), which provides more information to surgeons in choosing the appropriate treatment.

Abstract no.: 28962

ONE-STAGE SURGICAL TREATMENT OF CONCOMITANT INJURIES OF THE UPPER EXTREMITIES USING MODERN TECHNOLOGIES OF RECONSTRUCTIVE AND PLASTIC SURGERY

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Concomitant injuries of the upper extremities in the context of their anatomical features in the vast majority of victims are accompanied by damage of several functionally important structures that characterizes the severity of this type of damage and the complexity of rehabilitation. The aim of the study was to develop and implement new tactics in carrying out one-stage reconstructive reparative operations in complex injuries of the upper extremity. The results of surgical treatment of 152 patients with severe injury of the upper extremity have been studied and analyzed in a period of 3 months to 3 years. In general the positive results were obtained at 147 patients (96.7%). Long-term results were studied at 130 patients. When localizing trauma at the arms, wrists and forearms height good and satisfactory results were obtained at 93.5% of patients and at the localization of injury in the shoulder - at 95,5%. We found that the best results were achieved with incised wounds (80,8%) depending on kind of injury and the actions of traumatic agent. Satisfactory results (68.0%) were obtained among patients with contused, teared and crushed wounds in the vast majority of observations. When restoring the three anatomical structures at patients the positive outcomes were observed at 94.5% of patients, four - at 92.3%, five or more - at 92,9% of the patients. Studies on one-stage surgical treatments have shown the undoubtedly advantage of this tactic over traditional multi-step treatment.

Abstract no.: 28964

ENDOSCOPIC EXCISION OF A GANGLION CYST IN THE INFRAPATELLAR FAT EXTENDING INTO THE SUBCUTANEOUS LAYER

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Ganglion cysts of the knee are uncommon. Advances in imaging techniques as well as widespread use of arthroscopy have made detection of these cysts easier, and most can be treated arthroscopically. Ganglion cysts arising in the infrapatellar fat are even more uncommon. We report a case of a ganglion cyst in the infrapatellar fat with the subcutaneous extension. It was successfully treated by endoscopic cystectomy and orifice closure. In conclusion, extra-articular ganglion cyst in the infrapatellar fat with subcutaneous extension, could be successfully be treated by endoscopic cystectomy and orifice closure, when MRI images shows the communicating channel.

Abstract no.: 28966

LIMBS WITH VASCULAR TRAUMA - SALVAGE WITH LIMITED RESOURCES

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Since limbs with combined Orthopaedic & Vascular injuries are traditionally admitted in the Orthopaedic emergency department, it is the prime responsibility of the treating surgeon to identify and treat the vascular injury along with the co existing skeletal trauma. Speedy action is dictated by the fact that tissues deteriorate rapidly under anoxic conditions, muscle tissue being the most susceptible. Revascularisation should preferably be performed within 6 hours (Golden period). We present herewith our experience of managing such injuries with limited resources without the help of vascular surgeons. The diagnosis was usually clinical- an absent distal pulsation aroused suspicion of arterial damage. Arteriography was useful in ipsilateral double fractures to define the level of arterial injury. On suspicion of arterial injury a standard protocol was initiated as follows: The patient was resuscitated & the blood vessel explored. The type of vascular injury was identified i.e. contusion, partial transection or complete transection. Skeletal stabilization was then achieved by internal or external fixation. Vascular reconstruction by end to end repair or by a reversed saphenous vein graft was thereafter performed. Fasciotomy was done in selected cases specially those in which the injury- revascularization time was more than 6 hours. Postoperative care involved limb placement at body level, Sympathetic blockade for 48 hours, vasodilators, Lomodex, Aspirin & antibiotic therapy. Urine was monitored for smoky color indicating myoglobinuria. Mannitol was routinely given to minimise myoglobinuric nephropathy. Majority of the severely injured limbs could be salvaged with good function. Complications included acute renal shut down, infection leading to septicaemia, thrombotic occlusion of repair & gangrene. Recently arterial shunts have been used to make it possible to attend to life threatening injuries & to halt the noxious effects of ischaemia thereby buying time for vascular reconstruction.

Abstract no.: 28970

PRIMARY EXCISION OF THE ULNAR HEAD FOR FRACTURES OF THE DISTAL ULNA ASSOCIATED WITH FRACTURES OF THE DISTAL RADIUS IN SEVERE OSTEOPOROTIC PATIENTS

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PURPOSE: The aim of this study was to evaluate clinical results of primary excision of the ulnar head for fractures of the distal ulna associated with fractures of the distal radius in elderly patients. **MATERIAL AND METHODS:** Twenty-two patients over 70 years old (mean age 80 years) were treated by ulnar head excision and distal radius plating. In 14 cases of them, there were comminuted fractures of the distal ulna showing Type 3 or 4 according to Biyani's classification. The mean follow-up period was 18 months (range 4 months - 5 years). Radiological evaluation was performed and overall clinical results were evaluated according to the Gartland and Werley scoring system. **RESULTS:** Bony union was achieved in all patients. At the latest follow-up time, the mean radioulnar distance was significantly decreased. Mean range of motion of the wrist was 52 degrees in flexion, 66 degrees in extension, 80 degrees in pronation, and 81 degrees in supination, respectively. Although mean grip strength decreased by 40% compared with the uninjured side, there was no complaint for it. According to the Gartland and Werley scoring system, there were 14 patients in excellent and 8 patients in good. 4 of 5 patients with over 3 years followed-up period resulted in excellent. **CONCLUSION:** Primary excision of the ulnar head in severe osteoporotic patient with fracture of the distal ulna associated with fracture of the distal radius is a recommended procedure because it can help to do early active exercise of the wrist.

Abstract no.: 28971

PERIOSTEAL TUBERCULOSIS OF LATERAL MALLEOLUS: A CASE REPORT

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We report an unusual case of periosteal tuberculosis of lateral malleolus in a young male patient. The patient was presented to us with symptoms of progressive increasing pain and swelling over the outer aspect of the right ankle with painless ankle movements comparable to normal side. On radiological evaluation, Ankle radiographs showed a small periosteal reaction at lateral part of lateral malleolus and rest of bones was reported as normal. Later MRI scan showed increased signals within the lower end of the fibula on T2-weighted images. The FNAC smears of the lesion showed Langhans giant cells and epitheloid cell granuloma. Culture failed to grow any organism. Polymerase chain reaction analysis, of the FNAC specimen, had confirmed *M. tuberculosis* infection. The patient responded to anti-tubercular treatment with complete resolution of symptoms and significant decrease in swelling. Total count and ESR returned to normal with 2 month 4 drugs anti tubercular therapy and now he completed 2 drug maintenance therapies and is asymptomatic at present.

Abstract no.: 28973

FACTORS FOR FAILURE OF DISTAL INTERLOCKING SCREWS AFTER IM-NAILING OF FEMORAL SHAFT FRACTURES

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Purpose: We analyze the effect of several factors for failure of distal interlocking screws after treatment of femur shaft fractures with interlocking IM nail. Materials and Methods: From 2006 to 2009, 52 patients operated with intelockin IM nailing for treatment of femoral shaft fractures. The patients who experience of breakage of distal interlocking screws (Group I), others (Group II) got satisfactory union of fractures. We analysed the factors as fracture type, the ratio of diameter of nail to femoral intra medullary diameter, fracture distance after operation, stability according to Winquist-Hansen classification, time to weight bearing after operation. We used paired t-test for statistic analysis. Results: The average age was 52 in group I and 43 in group II, but there is no statistical significance. The fracture type of Group I were 4 transverse, 1 spiral fracture, in Group II 15 Oblique type, 18 transverse, 14 spiral types, but there is no difference between fracture type. The ratio of nail diameter to intramedullary diametor were 78% in Group I and 81% in group II ($p<0.05$). the distance of fracture after operation were 6.7mm in group I and, 5.5mm in group II ($p>0.05$). the duration to weight bearing after operation were 7 days in group I, 13 days in group II ($p>0.05$) Conclusion: The factors for failure of distal interlocking screw after IM-nailing of femoral shaft fracture were the use of inappropriate nail diameter and the early ambulation. Therefore, the proper diameter of nail should be decided and beginning of the ambulation should be decided according to stability of fracture site.

Abstract no.: 28982

CHANGES OF SAGITTAL ALIGNMENT ACCORDING TO PELVIC INCIDENCE

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This is Prospective comparison study of sagittal spinopelvic parameters according to pelvic incidence (PI) in normal male volunteers. Sagittal standing radiographs of the whole spine and pelvis in 182 normal healthy adult male volunteers were measured. The subjects were classified into 5 groups according to the magnitude of their pelvic incidences. Among them three groups were selected to compare spinopelvic parameters. Thoracic kyphosis and T12 LEP-H angle did not show significant difference among three groups. Group 3 has the largest magnitude of average lumbar lordosis ($-47.5 \pm 8.5^\circ$ vs. $-51.4 \pm 8.1^\circ$ vs. $-56.6 \pm 9.5^\circ$, $P < 0.001$) and sacral slope ($31.5 \pm 6.4^\circ$ vs. $35.5 \pm 6.0^\circ$ vs. $42.2 \pm 6.3^\circ$, $P < 0.01$), and has the smallest magnitude of average thoracolumbar kyphosis ($4.8 \pm 6.1^\circ$ vs. $3.1 \pm 7.0^\circ$ vs. $0.7 \pm 7.3^\circ$, $P = 0.018$). Group 3 demonstrated the most forward transition in C7 plumb ($-1.4 \pm 2.1\text{cm}$ vs. $-0.8 \pm 2.5\text{cm}$ vs. $0.0 \pm 2.5\text{cm}$, $P < 0.016$), T12 plumb ($-1.5 \pm 1.5\text{cm}$ vs. $-0.9 \pm 1.5\text{cm}$ vs. $0.2 \pm 1.9\text{cm}$, $P < 0.01$), and lumbar apex plumb ($2.6 \pm 0.5\text{cm}$ vs. $2.9 \pm 0.6\text{cm}$ vs. $3.4 \pm 0.9\text{cm}$, $P < 0.01$). Group 3 with high PI demonstrated the largest lumbar lordosis with the most forward transition of trunk.

Abstract no.: 28984

**DEVELOPMENT OF A HYALURONIC ACID INCORPORATED
HYDROXYAPATITE/CALCIUM SULFATE BONE CEMENT FOR
PROMOTING BONE RECONSTRUCTION**

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Calcium sulfate (CS) and hydroxyapatite (Hap) are commonly used as substitutes to replace amputated bone or as a coating to promote bone ingrowth into prosthetic implants. Existence of hydroxyapatite could overcome the drawbacks of calcium sulfate cement. On the other hand, hyaluronic acid (HA) of appropriate molecular weight alone in optimal concentration can induce osteoblast differentiation and bone formation. In this study, a combination of CS, Hap, and HA as a injectable bone cement was employed to improve osseous cell ingrowth and bone tissue formation, and the aim is to evaluate the effect of HA in bone cement on bone reconstruction with in vitro and in vivo assays. Bone cements were analyzed in vitro by biodegradation, cell compatibility, and mechanical tests. In the animal study, the cement was implanted into the femoral condyle of healthy mature New Zealand white rabbits with the counter-lateral condyle as control and the rabbits were sacrificed after 4, 8, and 12 weeks of implantation. New bone formation was labeled by intramuscular injection of fluorescent dye every two weeks. All specimens were analyzed by radiological and histological methods. The bone cement set within 20 minutes, and the viscoelastic properties of HA improved the mechanical behavior of original bone cement for clinical use. The bone cement showed non-cytotoxicity by an in vitro assay. After a period time of implantation, the results showed that the porous structure of cement had space for cell migration and the bone formation was promoted by incorporating HA.

Abstract no.: 28987

**IN SITU GELLING CELL-LADEN HYDROGEL AS INJECTABLE
CARTILAGE TISSUE ENGINEERED IMPLANT**

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Due to the limitations in the current treatment modalities, tissue engineering for the treatment of cartilage injury and osteochondral injury is the future trend. Hydrogels have been employed as injectable scaffolds for biomedical applications, and they could be utilized as delivery systems, cell carriers, and scaffolds for tissue engineering. As hydrogel components, methyl cellulose and chitosan both have good results for cartilage regeneration. The objective of this study was to employ the methyl cellulose/succinyl chitosan based hydrogel as an injectable in situ gelling hydrogel with encapsulated cells for cartilage tissue engineering without crosslinking reagent. Methyl cellulose was oxidized to generate dialdehyde methyl cellulose (DAC), and succinyl-chitosan (S-CS) was synthesized. The modifications of DAC and S-CS were quantified by assays. Physical properties were determined as well. The morphology of DAC-S-CS hydrogel was observed with SEM. Cell viability tests were performed with L929 fibroblast cell line and primary human chondrocytes, and live/dead staining of cells encapsulated within hydrogel was performed. Finally, in vitro chondrogenesis of mesenchymal stem cell (MSCs) as target cell was examined with histological assays. The gelation time and rheological characteristics of hydrogel was affected by the oxidization degree of DAC. However, the swelling ratio, water content, and morphology were comparatively affected by DAC to S-CS ratio. Histological analysis showed MSCs were induced into chondrocytes and secreted related ECM in the hydrogel. In conclusion, this polysaccharide hydrogel without any crosslinking agents has potential to be used as in situ injectable scaffold for cartilage tissue engineering.

Abstract no.: 28988

THE NATURAL COURSE OF THE ACUTE OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURE

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Introduction: The vertebral body fracture is the most frequent osteoporotic fracture. In spite of this there is considerable uncertainty about the duration of pain, the magnitude of disability and how much daily life is disturbed in the post-fracture period. The aim of the present study was to follow the course of pain, disability, ADL and QoL in patients during the year after an acute vertebral body fracture. **Patients and Methods:** All the patients over 40 years admitted to the emergency unit because of back pain with a radiologically acute vertebral body fracture were eligible. A total of 107 patients were followed for a year. The pain, disability (von Korff pain and disability scores), ADL (Hannover ADL score), and QoL (EQ-5D) were measured after 3 weeks, 3, 6 and 12 months. **Results:** The average pain intensity score after 3 weeks was 70.9, the disability score 68.9, the ADL score 37.7 and EQ-5D score of 0.37. The largest improvements, 10–15%, occurred between the initial visit and the 3 months follow-up and were quite similar for all the measures. From 3 months, all the outcome measures leveled out or tended to deteriorate. **Discussion:** After a year the fractured patients' condition was similar to the preoperative condition of patients with a herniated lumbar disc, central lumbar spinal stenosis. Instead of the generally believed good prognosis for the greater majority of those fractured, the acute vertebral body fracture was the beginning of a long-lasting severe deterioration of their health.

Abstract no.: 28989

PRIMARY BIPOLEAR ARTHROPLASTY FOR THE TREATMENT OF UNSTABLE INTERTROCHANTERIC AND SUBTROCHANTERIC FRACTURES IN ELDERLY PATIENTS

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OBJECTIVE: To analyse the functional results of bipolar arthroplasty in the treatment of intertrochanteric fractures in elderly. **METHODS:** One hundred independently mobile patients over the age of 60 (mean age= 71.65) years having an unstable intertrochanteric or subtrochanteric fracture (Ewan grade III and IV) were treated with primary prosthetic replacement using cemented bipolar arthroplasty by standard posterior approach. The patients were followed up for an average period of 60 months. **RESULTS:** The Harris Hip Scores were rated as good or excellent in 81% of the patients and remained almost unchanged with time. Unrestricted weight-bearing ambulation started at an average of 5.5 days after the operation. Roentgenograms showed early bone formation around the extramedullary part of the femoral component. Systemic complications were found in 9 cases and 1 death after leaving hospital. Operation related complications occurred in 8 cases, including 3 cases of thigh pain, 1 iatrogenic fracture of proximal femur, 1 hip dislocation, 2 delayed unions of fractures and 1 superficial infection. There were no aseptic loosening, peri-prosthetic infections, ectopic ossification or injuries of nerves and vessels.

CONCLUSION: Bipolar hemiarthroplasty is indicated for patients over 60 years with intertrochanteric fracture. The organic or systemic malfunctions should be corrected during perioperative period. Meanwhile, retaining of lesser trochanter and reconstruction of calcar femorale are important for improving periprosthetic biomechanics and reducing local complications. The bipolar design permits conversion to a total hip arthroplasty, and may reduce the risk of acetabular cartilage damage. The early walking that the bipolar arthroplasty made possible is considered to be a major factor for faster rehabilitation and a lower incidence of pressure sores, pulmonary infection, and atelectasis compared to the patients undergoing internal fixation for similar fractures reported in the literature.

Abstract no.: 28994

MODERN TECHNOLOGY OF SURGICAL CORRECTION OF CONGENITAL FLATFOOT WITH USE OF FUNCTIONAL BIOMANAGEMENT

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Treatment of a congenital flatfoot is a challenge of the children's orthopaedy having social value, owing to the prevalence. Only at early stages of development of deformation conservative treatment allows to receive positive result. However, owing to untimely diagnostics and absence of adequate treatment, a significant amount of patients for correction achievement need operative treatment. Purpose of study: Improve results of surgical treatment of congenital flatfoot, decrease degree of operative intervention, and reduce time of stay of patients in a hospital. Patients and methods: Study of results surgical treatment 145 patients at the age from 1,5 till 18 years with congenital flatfoot of various degree of expressiveness has been performed at CITO department of pediatric orthopedics since 2006. The primary goal of complex surgical treatment is reduction of normal interposition of bone and articulate structures of foot and creation of optimum conditions for its correct anatomy and functional development further. Conclusion: As a result of complex treatment - surgical correction with the subsequent course of functional biomanagement correction of deformation with restoration of impellent functions of active and passive stabilizers of foot received at 78 % of patients. There was no relapse after 4 years after surgical correction. Inclusion of a method of functional biomanagement in system of rehabilitation actions allows depending on pathology.

Abstract no.: 29001

CONTRAST-ENHANCED MULTISPIRAL COMPUTED TOMOGRAPHY OF CONGENITAL HIGH HIP DISLOCATION IN CHILDREN AND RATIONAL OPERATION PLANNING

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Contrast-enhanced multispiral computed tomography of the coxofemoral joint was performed on 15 patients with congenital high hip dislocation at the age of 1–13 years. After contrast enhancement the condition of acetabulum was assessed the roof, anterior and posterior rims, dimensions and deformations labrum and fat pad. The determine shape of the femur head and assessment of joint capsule condition. This study revealed that in four patients, the dimensions of the femur head and acetabulum did not match; in five joints, various soft-tissue obstacles - acetabular fat pad hypertrophy or presence of scar tissue; in six patients was found turned limbus blocking the acetabular opening and deformation of the anterior or posterior acetabular rim; in five children was discovered constriction of the joint capsule. The discovery of these alterations indicated the impossibility of closed reduction of hip dislocation, and open reduction was performed in 10 children based on objective indications. Comparison of examination results with operative findings indicates complete validity of the data obtained. In all cases, operative intervention revealed visualised pathological structures. Objective assessment of all transformations chooses the most convenient approach to the joint and the least traumatic method of reduction leading.

Abstract no.: 29004

TWO-YEAR FOLLOW-UP STUDY OF LOWER LEG AND KNEE ALIGNMENT AFTER THA IN COXITIS KNEE

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Introduction: It is known that severe osteoarthritis (OA) of the hip develops into secondary OA of the knee. We studied changes of lower leg and knee alignment after THA in such cases.

Patients and Methods: Lower leg and knee alignment of 102 patients undergone total hip arthroplasty (THA) were studied radiologically. The mean age was 61 years (43-78 years). We evaluated femorotibial angle (FTA), mechanical axis (MA) and patellar rotational ratio (PRR) of substituting the hip rotational position preoperatively, postoperatively and final follow-up.

Results: In 28 patients of lateral weight bearing group, the mean FTA was improved from 168 degrees preoperatively to 170 degrees postoperatively and maintained 170 degrees. In 19 patients of medial weight bearing group, the mean FTA was improved from 180 degrees preoperatively to 178 degrees postoperatively and maintained 178 degrees. In 28 patients of lateral weight bearing group, the mean MA was improved from 87.5% preoperatively to 73.8% postoperatively and maintained 72.9%. In 19 patients of medial weight bearing group, the mean %MA was improved from 24% preoperatively to 31.9% postoperatively and maintained 31%. In 60 patients of lateral external rotation group, the mean PRR was improved from 27% preoperatively to 9% postoperatively and maintained 9%. In 9 patients of medial external rotation group, the mean PRR was improved from -17% preoperatively to -10% postoperatively and maintained -9%.

Discussion and Conclusion: Lower leg and knee alignment after THA in coxitis knee were improved after THA. In the follow up of two-year, the knee alignment was maintained.

Abstract no.: 29006

**FOURTH AND FIFTH CARPOMETACARPAL FRACTURE DISLOCATION -
NEW CLASSIFICATION AND TREATMENT**

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From November 2002 to April 2008, we treated 28 cases of the fourth and fifth CMC joint fracture-dislocation. All cases have both plain radiographs and computed tomography (CT). Cain's classification is widely used for the fourth and fifth CMC injury. However, this does not include the type of fourth and fifth MC base fracture, which profoundly influences the result of treatment. So we made a modified classification and treatment options according to involvement of the fourth and fifth MC base fracture and the amount of involvement of the articular surface of the hamate fracture. Type I represented a subluxation or dislocation of the fourth and/or fifth CMC joint without MC fracture. Type II is identical to Type I except for the fourth MC base fracture. Type III is identical to Type I except for the fourth and fifth MC base fractures. These types were divided into three subtypes (a-c) depending on involvement of the hamate fracture determined by CT. Subtype (a) means less than one-third articular surface of the hamate involvement, subtype (b) more than one-third, and subtype (c) coronal splitting. Type Ia (5 cases) was treated with closed reduction and the others (23 cases) were treated with open reduction. Six months postoperatively, 19 cases showed excellent outcome, eight good, and one fair according to the Kumar scale. In conclusion, fourth and fifth CMC fracture-dislocation is very complex injury. To achieve the good treatment results, the understanding of the fracture patterns and injury mechanisms is necessary. CT is very useful to evaluate an accurate situation of this fracture and to construct surgical intervention. Failure of satisfactory reduction and stabilization may result in decrease grip strength, nonunion and painful degenerative arthritis.

Abstract no.: 29007

INVESTIGATION OF EFFICIENCY OF CELLULAR TECHNOLOGIES AT SURGICAL CORRECTION OF CONGENITAL EXTREMITY LENGTH DISCREPANCY IN CHILDREN

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Purpose of study: Perfection of osteoreparation on the basis of modern cellular technologies application. Patients and methods: Study of results of cellular therapy application has been performed at CITO department of pediatric orthopedics since 2006. There were 32 patients, aged 5 – 16 years, with congenital extremity length discrepancy. Autologous stromal osteoblasts precursor cells were isolated from bone marrow bioplate. Their phenotyping by cellular antigens was performed followed by their cultivation in vitro. After cultivation cells were injected according to special protocol directly into zone of distraction. Some culture was preserved in cryo-bank for a long time. Results: Preliminary results showed not only a rapid substitution of defects but a considerable improvement of regenerate quality at its dynamic stimulation during the period of bone length correction. Regenerate condition was evaluated not only by roentgenologic data but according to results of ultrasound investigation as well. Mean term of treatment made up 5,5 months at 3,5-6 cm compensation of shortening. In the control group average term of treatment was 9,25 months. Conclusion: Thus, use of this technique opens good prospectives for optimum treatment of children with severe loco-motor system pathology.

Abstract no.: 29011

ARTHROSCOPIC FIXATION FOR MINIMALLY DISPLACED GREATER TUBEROSITY FRACTURE

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We present a simple procedure in patients with minimally displaced greater tuberosity fractures using the arthroscopic single row fixation with two inverted mattress stitch applying the suture-bridge technique using Versalok suture anchor. This arthroscopic procedure is easy and quick, and may provide an anatomic reduction and adequate fixation of greater tuberosity fracture.

Abstract no.: 29014

**OUTCOMES AFTER SURGICAL TREATMENT OF
TRANSTROCHANTERIC FRACTURES USING GAMMA NAIL: DOES THE
STABLE OR UNSTABLE TYPE IMPACT THE PROCEDURE?**

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PURPOSE: To assess the treatment outcome depending on type of transtrochanteric fracture treated with closed reduction and internal fixation using Gamma nail. **MATERIAL and RESULTS:** 149 patients, 37 men and 112 women aged 40 to 98 years (mean 78,9), underwent closed reduction and internal stabilization for transtrochanteric fracture in Istituto Chirurgico Ortopedico-Traumatologico – Latina (Italy) (119 patients) and Military Medical Institute in Warsaw (Poland) (30 patients). A patient was classified according to AO classification and divided into 2 groups. Group S with stable fracture (A1, A3.1 A3.2) and group U with unstable type of fracture (A2, A3.3). We performed closed reduction and internal fixation with Gamma nail. There was X-ray evaluation after operation. The average age in both groups was similar (81 - S vs. 79.3 - U). Patients were followed up for a 6 months period after operation. We evaluated the radiological signs of bone union and mobility. In 3.6% of S group and in 17% of U we didn't obtain complete reduction of the fracture. In S group there was 1 (1,8%) major complication (cut out after 2 weeks) and 1 patient died 12 days after operation. In U group there were 8 (8.5%) major complications (4 dislocations of the implant, 1 fracture of the nail, 1 infection, 2 secondary displacements), 3 patients died. **CONCLUSION** Most of the patients with transtrochanteric fracture suffer from unstable type of fracture. In these cases it is more difficult to obtain proper reduction and internal fixation is more likely to fail. These patients are more likely to complications, disturbance with bone union and rarely return to full mobility. We suggest that unstable transtrochanteric fracture need to conduct another rehabilitation program after surgery with longer period of reduction of weight bearing and less aggressive rehabilitation.

Abstract no.: 29016

CLINICAL OUTCOME OF LIPOSARCOMA

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Rapidly increasing elderly population in Japan, malignant soft tissue sarcomas has also increased. Liposarcoma is one of the most common malignant soft tissue tumors. We studied retrospectively about 67 patients referred to our hospital from 1990 to 2009. They were 57 untreated cases, and 6 resected and 4 recurrent referred cases. 30 males and 37 females were included. The mean age was 61.9 years (22-87). The sites were 39 cases of thigh, and 9 of lower leg, 10 of trunk, 7 of upper arm, 3 of forearm. FDG-PET was performed in 28 cases. All cases were histologically proven (myxoid, n=31; pleomorphic, n=16; well-differentiated, n=13; dedifferentiated, n=7). The mean follow-up periods were 38.7 months (3-232). The mean value of SUVmax was 3.18 (0.86-12.6). Preoperative chemotherapies were performed in 22 patients. Except for one carbon ion radiotherapy and one thorombotherapy, all the rest were resected. 62 cases were wide resection, marginal resection in 3 cases. Postoperative irradiation performed in three cases. Clinical outcomes were as follows, CDF 47 cases, AWD 12 cases, NED 1 cases, DOD 6 cases, DOAD 1 case. 3-ys overall survival rate was 100% in well differentiated and myxoid, and 69.9%, 85.7% in pleomorphic, dedifferentiated subtypes. 3-ys event free rate was 68.4%, 96.0%, 64.9%, 64.3%, in well-differentiated, myxoid, pleomorphic, dedifferentiated subtypes. Clinical outcome was significantly better in low SUVmax (<4.0) cases than high (>4). Treatment for old patients will be needed to consider about their QOL. SUVmax value will be available to the prognosis of liposarcoma.

Abstract no.: 29017

TC99M BONE SCINTYGRAPHY IS USEFUL DIAGNOSTIC TOOL FOR STRESS FRACTURE OF CUBOID BONE IN CHILDREN

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Stress fracture of lower extremity is one of the causes of limp; however, it is not seen frequently in infants and young children. We report the clinical characteristic and radiographic findings of the series of stress fracture of tarsal cuboid in early childhood. We experienced 15 children with stress fracture of tarsal cuboid. There were 8 girls and 7 boys with a mean age of 26.1 months. Limping gait was the only chief complaint in all patients. Their symptoms were relieved only by rest and/or oral short-term NSAID. The mean time of the improvement of symptom after the visit of OPD was 13 days (7-28 days). We took plain radiographs and Tc99m bone scintigraphy in all patients. MRI was done in one patient. In all patients, initial plain foot radiographs showed no abnormal findings, but bone scintigraphy showed hot spot in cuboid taken at initial visit. Focal sclerotic change in cuboid adjacent calcaneocuboid joint was appeared at 2 weeks on the plain radiograph. Radiographic lesion spontaneously improved within a few months in all patients. MRI of a 3-year-old boy showed findings suggesting a stress fracture. On MR images, a marked linear, hypointense signal abnormality in the cuboid -in contrast to an edema- was present. A stress fracture of cuboid is considered as one of the causes of limping gait in early childhood. Tc99m Bone scintigraphy is a useful method to diagnosis it early.

Abstract no.: 29019

GENU VARUM TREATED WITH OPEN WEDGE PROXIMAL TIBIAL OSTEOTOMY

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Purpose: The purpose of this study was to evaluate clinical and radiographic results of open wedge PTO below the tubercle with genu varum in relatively young patients. **Material and Methods:** We retrospectively studied 37 knees with genu varum that was treated open wedge PTO below the tubercle at between February 2001 and August 2008. The median follow up was 36 months (range, 12-108) and the median age of the patients at the time of surgery was 26 years (range 16-45). The clinical results were evaluated by using Lysholm knee score and Hospital for Special Surgery knee score. **Results:** All but 1 patient were obtained healing and union at the osteotomy site on radiographs an average of 3 months postoperatively. Lysholm knee scores improved from 89.4 (range, 65 to 100) preoperatively to 98.6 (range, 95 to 100) at the final follow-up ($P = .0001$), and the mean HSS score improved from 91.1 (range, 70 to 99) preoperatively to 98.5 (range, 92 to 100) at the final follow-up ($P = .0001$). Satisfactory score were assessed to 8.6 ± 1.0 (range, 7 to 10). The mean tibiofemoral angle was increased from -1.6° preoperatively to 7.7° at final follow-up ($P < 0.0001$). The mechanical axis deviation was also significantly shifted from 15.0% preoperatively to 50.6% at final follow-up ($P=0.0002$). However, the posterior tibial slope was not significantly changed from 9.7° preoperatively to 8.7° at final follow-up ($P=0.2474$). The patella heights as measured by Insall-Savati ratio and Blackburne-Peel ratios were also not changed statistically significant. **Conclusion:** Our study showed that PTO below the tibial tubercle can be successfully obtained bony union with correction of the coronal malalignment using only smaller sized plate in young patients with genu varum.

Abstract no.: 29020

ONE-SIDED COLLAPSE IN THE LOWER THORACIC AND LUMBAR SPINE AS A SIGN OF VERTEBRAL METASTASIS

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Pedicle sign is known as a sign of metastatic vertebrae. However, it can only be seen in advanced cases. On the other hand, we often encounter one-sided collapse. The purpose of this study is to determine whether or not a one-sided collapse can be a sign of spinal metastasis. Materials and Methods: The material consisted of 120 patients with vertebral metastases and 96 patients with osteoporotic compression fracture. Primary malignancies were of the breast (31), lung (22), stomach (15), prostate (10), colon (10), and other. Measurements were done with antero-posterior view of X-ray image. We measured vertebral height at both right and left pedicle, and their angulated deformity. Mann-Whitney's U test was used for statistical analysis. Results: Vertebral height difference was 1.6 mm (0-13.4 mm) in the metastatic group, and 1 mm (0-9.3 mm) in the osteoporosis group. This was a significant difference ($P < 0.02$). Angulated deformity was 4 degrees (0-19 degrees) in the metastatic group, and 2 degrees (0-20 degrees) in the osteoporosis group. This also showed a statistical difference ($P < 0.001$). One-sided collapse was found in 43.4% in the metastasis cases, and in 20.1% with osteoporotic fractures. Pedicle sign was found in 21.7% in the spinal metastasis cases but in none of the osteoporotic fracture cases. Conclusion: One-sided collapse is more frequently and evidently seen in patients with spinal metastasis than with osteoporotic fracture. The one-sided collapse is a useful sign to discriminate metastatic vertebral collapse from benign compression fracture.

Abstract no.: 29021

OSTEOPOROSIS MEDICATIONS IN THE PATIENTS WITH HIP FRACTURE

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Background and objectives: Hip fracture is associated with high morbidity, mortality, and economic burden worldwide. It is also a major risk factor for a subsequent fracture. Although osteoporosis medications can dramatically reduce fracture risk, rate of osteoporosis medications in the elderly remain low. It is important to initiate osteoporosis medications. Our objectives were to examine and evaluate rates of osteoporosis medications in patients with hip fracture by comparing rate of osteoporosis medications with that of another medication. **Method:** Using medical records, we examined medications in 155 patients over age 60 treated with hip fracture at Tamanagayama hospital, Nippon Medical School between January 2005 and April 2010. **Results:** 143 patients (92.3%) were treated with some medications, but only 24 patients (15.5%) were treated with osteoporosis medications before fracture. Although 42 patients (27.1%) had a past history of osteoporotic fracture, of these patients only 16.7% were treated with osteoporosis medications. 20 patients (12.9%) had past history of heart disease or brain infarction and of those patient 80.0% were treated with anticoagulant medications for prevention of subsequent attack. Only 30 patients (19.4%) were treated with osteoporosis medications at discharge. **Conclusions:** To compare with rates of another medication, rates of osteoporosis medication in patients with hip fracture are low both before and after hip fracture. Professionals dealing with the elderly should be more attentive to the need for primary and secondary prevention of osteoporotic fracture.

Abstract no.: 29024

OPERATIVE TREATMENT OF PROXIMAL TIBIA FRACTURES – CLINICAL RESULTS

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Proximal tibia fractures are difficult to treat, especially those with intraarticular involvement and often have a high complication rates. The aim of the study is to present our clinical and functional outcomes. From January 2008 to December 2010 fifty-one patients with fifty-four fractures have been treated in our institution. Six of them are lost to follow-up and in 3 cases post operative treatment is not completed. This study observes the rest 42 patients with 44 fractures. There were 17 women and 25 men. The average age of the patients was 44,2 years (range 21–77 years). Patients sustained their fractures by the following mechanisms: MVA – 43 fractures; fall from standing height – 29; sport injures – 21 and fall from a height – 7. The average follow-up period was 14 months. According to the AO the fracture type was 41: A3 – 1; B1 – 6; B2 – 4; B3 – 15; C1 – 5; C2 – 6; C3 – 7. Three of the fractures were open – G&A II-IIIA. Operative technique: MIPO in 13 fractures (31%) and ORIF in 29 (69%). Because of the metaphyseal defect grafting was performed in 18 fractures (41%). Results: All fractures in the group healed except one. We have used Knee Society score for assessment of functional outcomes: excellent – 32 fractures (71%), good – 6 (14%); fair – 5 (12%) and poor – 1 (2%). Conclusion: Anatomical reduction of joint surface and stable fixation of the fracture site allows early range of knee motion with favorable clinical results.

Abstract no.: 29029

MANAGEMENT OF ACUTE COMPARTMENT SYNDROME IN THE UNITED KINGDOM: AN ONLINE SURVEY

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Background: Acute Compartment syndrome is an orthopaedic emergency. However variations exist in terms of diagnostic criteria, clinical signs and treatment protocols in the UK. Our aim is to assess the clinical consistency among British orthopaedic surgeons in diagnosing and treating compartment syndrome. **Method:** A standard questionnaire consisting of 20 key points covering diagnosis and management of compartment syndrome was sent out to all senior orthopaedic surgeons registered with the British Orthopaedic Association (BOA). The results were then stratified according to each section and key point to ascertain the trends amongst British orthopaedic surgeons. **Result:** A total of 400 surgeons were contacted with a return rate of 48% (192) of which consultants made up 82.8% (159). Compartment syndrome remained relatively rare with more than 50% saw 2 or less cases in the previous 2 years. In terms of diagnosis there was consistency regarding clinical signs with 94.8% stating pain out of proportion of the injury and 92% stating pain on passive stretching of the affected muscle as being the most reliable signs. 67.2% had a compartment pressure monitor available, but only 43.8% actually used it in suspected cases. Once diagnosed, most adopted the double incision technique of decompression (95%) and 82% would adopt either a shoelace technique or negative pressure dressings to help close the fasciotomies. **Conclusion:** Even though there are clear guidelines, which are evidence based for the management of acute lower limb compartment syndrome, there remain many variations in practise.

Abstract no.: 29030

USEFULNESS AND PITFALL OF INTRAOPERATIVE SPINAL CORD MONITORING

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Objective: The purpose of this study is to assess the usefulness and limitation of intraoperative spinal cord monitoring. **Methods:** In 150 patients the spinal cord monitoring was performed during spinal surgery using a single or a combined monitoring method. Monitoring methods included spinal cord evoked potentials after electrical stimulation to the spinal cord [Sp(E)SCEP, sensory related potential], muscle evoked potential after stimulation to the brain [Br(E)MsEP, motor related potential]. **Evaluation:** The critical point of the evoked potentials was decided as follows. In Br(E)MsEP, complete diminishing of the potential was thought to be a significance change. Decrement of the spike wave below 50% to the control was decided to be a critical point of Sp(E)SCEP. The relationships between significant change of the evoked potentials and postoperative neurological changes were evaluated. **Results:** In this series, true negative 148 cases, false positive 1 case and false negative 1 case. In the meningioma of the thoracic spinal cord case, Br(E)MsEP showed no significant changes of the potentials. However the patient complained the dysfunction of the posterior column after surgery. This case was false negative. **Discussion:** Br(E)MsEP is a good indicator of motor function. However this potential is sometimes unstable on the condition of anesthesia. To minimize the effect of anesthesia and to avoid false negative case in which selective part of the spinal cord is damaged, it is recommended to perform multimodality monitoring using Sp(E)SCEP and D wave.

Abstract no.: 29036

RECENT TREND AND CLINICAL ANALYSIS OF THE INFECTIOUS SPONDYLITIS

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Introduction: The infectious spondylitis is one of the common spinal disorders. There are quite a few patients who need the surgical treatment. In this presentation, the recent trend and clinical analysis of the infectious spondylitis is reported. **Materials and methods:** 68 cases with the infectious spondylitis are reviewed. There are 45 males and 23 females. Their average age is 70.7 years old from 47 to 90. 57 out of them are pyogenic spondylitis, 8 are tuberculous spondylitis and 3 mycotic spondylitis. Yearly change of the numbers of this lesion, infected site of the spine, causative bacteria, treatment methods and prognosis are analized. **Results** The infected sites of the spine are as followd. 45 cases in lumbar spine, 10 cases in thoracic spine, 9 cases in cervical spine and 4 cases in thoracolumbar. The causative bacteria are identified in 22 cases among 39 through. Staphylococcus aureus is the most popular causative bacteria. MRSA and MSSA are followed. Diabetes mellitus is the most popular complication. 38 cases are treated by the conservative therapy, 9 cases by the percutaneous drainage and 21 cases by surgical procedure. 7 cases are dead because of the basic lesions. 54 cases have good recovery and returned to the social life. 7 cases have been treated because of their repeated recurrence. **Discussion and conclusions** Recent clinical feature is characterized by the increase of the elder patient, compromized host and the patient unless acute inflammatory symptoms. The deverification of the causative bacteria and resistant bacteria is also a trend. It is concluded that early surgical treatment must be considered for the patients with progressive neurological paralysis.

Abstract no.: 29042

ENDOSCOPIC REVISION SURGERY AFTER PERCUTANEOUS LASER LUMBAR DISC DECOMPRESSION

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Purpose: Percutaneous laser disc decompression (PLDD) and micro-endoscopic discectomy (MED) are recently becoming popular for treatment of lumbar disc herniation. However, the poor results of PLDD due to the inappropriate surgical indication are also reported. The purpose of this study is to evaluate the revision surgery by MED after PLDD.

Subjects and methods: We analyzed 10 cases that underwent MED revision surgery after PLDD (male: 6 cases, female: 4 cases, ave. 38.1 ± 9.2 y.o.). The following findings were studied retrospectively: the MRI finding before PLDD (the level & type of herniation), the clinical & MRI findings after PLDD and the clinical results of MED revision surgery.

Results and discussion: The level of herniation before PLDD was L4/5 in 5 cases and L5/S1 in 5 cases. The type of herniation was subligamentous extrusion in 7 cases and sequestration in 3 cases. After MED revision surgery, all of 10 cases were improved well, however, 2 cases had herniation again at the same level in two years. It is reported that overall success rate of PLDD was from 70 to 89%. The surgical indication of PLDD might be limited to contained type herniation. However, the diagnosis of contained type is sometimes hard to be distinguished by MRI, in addition, the over evaluation to the less invasion and the clinical results of PLDD may accelerate to spread the surgical indication.

Abstract no.: 29044

STATISTICAL ANALYSIS OF THE HIP FRACTURE

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Introduction: The hip fracture is a common trauma in the elder people in the world. The number of the patient has been increased in many countries every year. In this report, the operated cases with hip fracture are statistically analyzed. **Method:** 1333 cases with hip fracture treated in 42 national hospitals belong to National Hospital Organization between from April, 2006 to March, 2009 are reviewed. They are 262 males and 1071 females. They are evaluated at the point of operation age, fracture type, complications on admission, operative method, posy-operative complications, gait ability and the history of treatment for osteoporosis. **Results:** The age distribution is as follows, 514 cases in eighties, 393 in seventies, 202 in nineties and 224 in other ages. There are 636 cases with intertrochanteric fracture, 516 with femoral neck fracture, 147 with subtrochanteric fracture and 44 with unknown types, Complications on admission are recognized in 20.4% of the patient, 538 cases are operated by femoral nail system, 423 cases by hip prosthesis, 157 cases by compression hip system and 144 cases by screw system. Postoperative complications are found in 13%. Respiratory lesions are the most popular complication. Gait ability has been disturbed after surgery in many cases. 204 cases of 1333 cases are treated for osteoporosis before trauma. **Conclusions:** The hip fracture is expected to increase every year according to the increase of elder population. It seems that the early beginning of the treatment for osteoporosis is the most important to prevent the increase of the hip fracture.

Abstract no.: 29045

OUTCOME OF TUBINGEN HARNESS IN MANAGEMENT OF DEVELOPMENTAL DYSPLASIA OF THE HIP (DDH)

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Background: Developmental Dysplasia of the Hip (DDH) is a serious condition with significant morbidity if not diagnosed and treated early. It is identified and diagnosed by pattern recognition, screening/examination and investigation of suspected cases. Management involves bracing the hip within a 'safe zone'. This can be achieved successfully with various hip harnesses, the gold standard being the Pavlik harness. Within our hospital, the Tübingen Hip Abduction Orthosis is used. We have done a case series study to determine the clinical outcome of this particular harness. **Methods:** All infants who had DDH between April 2007 and February 2009 were included in the study. These infants had all been attending our Specialist Paediatric Orthopaedic clinic. A trained radiographer performed the alpha angle measurements on hip ultrasounds and classified the hips according to the Graf classification. Success of treatment was based on either normal alpha angle measurements on follow-up ultrasound or enlocated hip(s) on radiograph at 5 months old. **Results:** We identified 87 infants, of which 3 infants were excluded due to inadequate data. There were 119 affected hips in these 84 infants, females predominating 3:1. There was an equal left/right distribution. All hips were managed with a Tübingen orthosis and all but one baby commenced treatment within 3 months of age. Our overall success rate was 92.4%. Majority of hips (71%) required at most 6 weeks of treatment. We have not had any cases of avascular necrosis of femoral head. **Conclusions:** We have had excellent outcome results with the use of the Tübingen harness when treating DDH and our overall results are comparable with the published results of the Pavlik Harness. We therefore feel that Tübingen orthosis can be considered as another alternative in the treatment of DDH.

Abstract no.: 29048

ANALYSIS OF COMPRESSIVE STRENGTH AND SUBSIDENCE OF VERTEBRAL BODY CAGE BASED ON THE TAGUCHI METHODS FOR CERVICAL SPINE

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The Vertebral Body cages (VBCs) have been used to treat vertebral bodies with different maladies such as osteomyelitis, severe compression fracture, metastases, tumor, or infection. However, a vertebral body replacement commonly experiences graft fracture, loosening, and collapse in a short period after an orthopaedic surgery especially for the osteoporotic bone. The interface between the implant and vertebral body is an important topic. Therefore, the purposes of this study were to analyze the subsidence by using a FEM-based Taguchi method to investigate the effects of various factors to find the robust design of the vertebral body cage. Titanium mesh cage (TMC) might develop subsidence and cause local kyphotic deformity of the spine. For prevention of this complication, the appropriate spike design of the vertebral body cage (VBC) has been devised. In order to investigate the subsidence of the VBC, the finite element models with a nonlinear contact analysis have been developed. Then, the Taguchi robust design method was used to evaluate the implant designs. For the results of the FEM-based Taguchi method, the ring shape, the inner diameter, the spike height, the number of spike, the spike height, the spike obliquity, width of upper spike and a length of upper spike were especially important factors for preventing the subsidence. The ring shape, spike height and spike number play significant roles .The FEM-based Taguchi method could decrease the effort and time for analyzing the spike factors of the VBC.

Abstract no.: 29049

A TETHERED CORD SYNDROME DEVELOPING AFTER THE SURGICAL TREATMENT OF THE CONGENITAL VERTICAL TALUS

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A 6 months old male with previously untreated, neurologically normal left congenital vertical talus admitted our clinic. Treatment was begun to stretch the foot with casting and manipulation. This alone not completely corrected the foot. The foot was treated with complete subtalar release with Cincinnati incision at 11 months of age. The patient was evaluated by regular physical and radiographic examinations at 6th weeks and 3rd, 6th, 12th months after operation. It was seen on the lateral radiograph of the left foot at 28 months of age that the longitudinal arch was high. In clinical examination, we observed atrophy of thigh muscles and shortening of 2 cm on the left lower limb. Lumbar spine magnetic resonance imaging (MRI) showed tethered cord and tethered cord release was performed by a neurosurgeon. We conclude that the patients with congenital vertical talus may be referred for an MRI study to determine the presence of a tethered cord. Thus, foot deformities additionally developing by tethered cord syndrome can be treated earlier.

Abstract no.: 29055

OSTEOPOROSIS TREATMENT IN PRIVATE CLINIC DR.SABIC

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In this paper we treated 5600 patients with Dg of Osteoporosis during 01.01.2004-01.01.2011 in Private Polyclinic Dr.Sabic. All Ultrasound exams were done on Sonostat 2000 Aparatus, measurement on calcaneus. In this paper we will show prevalence of osteopenia and osteoporosis in different age groups and results of paranteral and per os treatment. We will show analysis for different type of fractures (compressive spine fractures, hip fractures etc) for every age group and present our treatment results. All results will be compared with analysis on other device. Osteoporosis is a disease of modern time and it's affecting more and more young people. It's successfully treated in early stages with preventing complications.

Abstract no.: 29057

ANATOMIC (DOUBLE-BUNDLE) ACROMIOCLAVICULAR JOINT RECONSTRUCTION: GOOD RESULTS OF IN VITRO BIOMECHANICAL STUDY AND FAILURE IN CLINICAL PRACTICE

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Acromioclavicular joint separations (AJS) represent one of the most common shoulder injuries. From a biomechanical point of view there is much importance of the coracoclavicular and acromioclavicular ligaments in controlling superior and horizontal translations of the distal clavicle. It is very important to reproduce the conoid and trapezoid parts of the coracoclavicular ligament – so-called anatomic or double-bundle coracoclavicular ligament reconstruction (ACLR). This technique is usually used to treat chronic AJS or previous surgery failure. We tried to use ACLR for acute AJS. First we performed in vitro study comparing stability in the horizontal plane and load to failure in vertical plane with native ligaments, reconstruction with MINAR and ACLR by SIRALOK5.0mm (anchor was fixed in coracoid and threads was oriented like native ligament). Horizontal translations was 4.4 ± 0.5 , 19.5 ± 2.3 and 8.8 ± 1.2 mm respectively and load to failure was 420 ± 20 N/ 6.2 ± 0.5 mm elongation, 322 ± 9 N/ 10.2 ± 1.1 mm elongation and 331 ± 14 N/ 9.3 ± 0.9 mm elongation respectively. So, ACLR by SIRALOK 5.0 mm showed good results which were better than MINAR. Three patients with acute AJS were surgically treated with ACLR by SIRALOK. We have met fracture of the anchor in one case during surgery and anchor was changed to new one. 5-12 days after surgery there was clinical and X-ray failure in all three cases and revision surgery showed fractures of the anchor again. So we cancelled to use this technique.

Abstract no.: 29058

COMPARISON OF DRAIN CLAMP AFTER BILATERAL T.K.A

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Suction drains provide an easy and feasible method for controlling hemorrhage after total knee arthroplasty. However, there has been no compromise regarding the optimal clamping time for these drains. We conducted a randomized clinical trial to compare 12-hour drain clamping and continuous drainage after total knee arthroplasty in terms of wound complications, blood loss and articular range of motion. To eliminate any other factor except duration of clamping, we chose to compare knees belonging to one single person, as well as restricting the study to those knees undergoing surgery due to osteoarthritis. From a total of 100 knees (50 patients) studied, the 12-hour clamping method resulted in a significantly smaller amount of post-operative blood loss ($p < 0.001$). The passive ranges of motion and wound complications were not significantly different between the two groups.

Abstract no.: 29061

**OPERATIVE TREATMENT OF DISTAL RADIUS FRACTURES
COMPLICATED BY CARPAL TUNNEL SYNDROME**

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INTRODUCTION: Distal radius fractures are most common type of upper extremity injuries. The variety of surgical methods (K-wires, external fixation, plating) is used in unstable intraarticular fractures. Carpal tunnel syndrome occurs in 18-26% of all the fractures. **METHODS:** For the period between 2000 and 2010 we have operated 176 patients at the age between 16 and 82 y.o. with distal radius fractures with the use of K-wires osteosynthesis (42 patients), external fixation (76 patients) and LCP plates (58 patients). Carpal tunnel syndrome occurred in 37 patients (21%) from all operated patients that required revision and neurolysis of the median nerve. **RESULTS:** The type of fracture and displacement was estimated according to the AO-ASIF classification as following: type A - 18% (32), type B – 26% (46), type C – 56% (98). In all the patients with carpal tunnel syndrome we performed open reduction of distal radius, osteosynthesis with precontoured palmar plate, cutting of carpal tunnel and neurolysis of median nerve. As a result of the treatment in 29 patients the neuropathy of median nerve was completely eliminated between 6 w and 4 m. In 6 patients we observed residual neuropathy with moderate paresthesia of distal phalanges of III-IV-th fingers. In 2 patients we couldn't eliminate neuropathy of median nerve with subsequent formation of persisted Sudeck syndrome. **CONCLUSION:** In the treatment of distal radius fractures, complicated by carpal tunnel syndrome, the method of choice is ORIF with plate together with neurolysis of median nerve.

Abstract no.: 29062

SURGICAL RESULTS OF GIANT CELL TUMOR OF BONE

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INTRODUCTION: A high local recurrence rate is the main issue in the treatment of giant cell tumor (GCT) of bone, extended curettage using a high-speed burr with further local adjuvants, has become one of the standard procedures in the treatment of GCT of bone.

AIMS: To investigate clinical results of GCT of bone, particularly in view of surgical methods and local recurrence rate. **PATIENTS and METHODS:** We retrospectively studied local recurrence of giant cell tumor of bone in 37 patients. There were 18 males and 19 females. The mean age of the patients was 31 years (range, 14-66 years). The average follow-up was 83 months. In the earlier series of operations, we used curettes of different sizes, but we recently used a high-speed burr and argon beam laser as an adjuvant treatment.

RESULTS: A total of 15 patients (41%) containing 3 recurrences when initially seen at our institute had at least one local recurrence. Of the 15 patients, 14 were managed with a simple curettage with or without local adjuvants initially. On the other hand, there was one recurrence treated with primary extended curettage with local adjuvants. There were 13 patients with a total of 15 local recurrences who were successfully treated by further extended curettage with local adjuvants. Two patients with a second local recurrence were consequently treated by wide resection and reconstruction.

CONCLUSION: Extended curettage with local adjuvant would decrease local recurrence rates of the GCT of bone.

Abstract no.: 29064

EXPERIENCE WITH TREATMENT OF OSTEOPOROSIS PATIENTS WHO HAD SUSTAINED MULTIPLE FRACTURE

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This study included 62 (mean age 77.8years) patients with osteoporosis who had received treatment for multiple fractures during a four-year period at our hospital. Results: There were 10 cases of fracture at 3 or more sites caused by traffic accident (5 cases), fall from stairs (3 cases). There were 52 cases of fracture at 2 sites caused by fall on leveled ground/floor (39 cases). Analysis of the side of accompanying fracture revealed that 37 cases had fracture of the arm and leg, including 29 cases with ipsilateral arm and leg fracture. Analysis of the combination of fracture sites suggested that the most frequent combination was fracture around the hip and arm fracture. The second was fracture around the hip and compression fracture of vertebrae. Regarding the gait ability at the time of discharge from hospital, only 37 patients possessed the ability to walk unassisted at the time of discharge although it had been possessed by 57 of the 62 patients before injury. Gait ability was lowered by 1 rank or more in 22 patients at the time of discharge relative to that before injury. Conclusion: Selecting surgery positively is advisable if fracture has developed in legs because training for leaving the bed earlier become possible. From the viewpoint of facilitating postoperative therapy, it is advisable to select simultaneous surgery on both the arm and leg in cases of combined arm and leg fracture if the general condition permits surgery.

Abstract no.: 29066

PALLIATIVE INTRA-ARTERIAL INFUSION CHEMOTHERAPY AND RADIOTHERAPY FOR NONOPERABLE BONE AND SOFT TISSUE SARCOMA

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Purpose: Since 1992, we have treated nonoperable sarcoma with intra-arterial chemotherapy and concurrent radiation therapy. The purpose of this study is to clarify the long-term results of this therapy. **Patients and Methods:** Twenty-seven patients who were considered nonoperable and treated with intra-arterial chemotherapy and concurrent radiation therapy were the subjects of this study. Subjects included 14 men and 13 women with a mean age of 55 years. Common histological diagnoses were osteosarcoma in 7, leiomyosarcoma in 5, unclassified spindle cell sarcoma in 4 patients. The location was the pelvis in 17, the lower extremity in 7, and other in 3 patients. Cisplatinum and/or Carboplatin were administered intra-arterially via a port. Radiation therapy was given to all patients daily at a dose of 1.8 to 2.8 Gy fractions totaling 54 Gy (38-78Gy). **Result:** (1) Progression free survival for more than 5 years was achieved in 3 patients, and for 3-5 years in 3, for 2-3 years in 5, for 1-2 years in 8, and for less than 1 year in 8. (2) 1-, 2-, and 5-year survival rates were 0.85, 0.62, and 0.24, respectively. (3) Fractures of radiated bone were found in 5 patients. **Conclusion:** Patients who were administered cisplatin prior to carboplatin had a better prognosis. This intra-arterial chemotherapy and concurrent radiation therapy achieved not only long-lasting local tumor control but also a longer survival with minimum deterioration of QOL.

Abstract no.: 29067

COMPLEX BADO TYPE 2 INJURIES AND FUNCTIONAL OUTCOME PREDICTORS

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Complex Bado type 2 lesions are difficult to manage. We present a series of 11 consecutive patients with complex Bado type 2 fracture dislocations operated between 2006 and 2008. Patient group consisted of 9 females and 2 males with an average age of 61 years (range: 12-72 years). The fracture dislocations were further classified into subtypes – type 2A (2), type 2B (6) and type 2D (3). All of the injuries were classified as complex injuries due to associated radial head or neck fractures. Internal fixation of proximal ulna and radial head reconstruction or replacement was carried out in all the cases. Lateral collateral ligament and anterior capsular repair was performed in 5 cases. Clinical and radiographic assessments were performed subsequently in the outpatient clinics. Mayo score was used to assess post op function of the elbow joint. Regression analysis was performed to calculate the effect of fracture type on functional outcome. Good to excellent results (Mayo score ≥ 75) were achieved in 8 out of 11 cases based on Mayo elbow scores at a maximum follow up of 34 months post fixation. Significant negative correlation ($r=0.787$, $p = 0.004$) was seen between the type of fracture and Mayo scores, the scores reduced with increasing complexity of fracture. Regression coefficient was -16.3 ($p = 0.009$). We conclude that sub types of Bado type 2 lesions are good predictors of functional outcome of the patients following surgery with type 2a showing significantly better results than type 2B and type 2D.

Abstract no.: 29068

SURGICAL ASSISTANT ROBOT FOR CONSTANT TISSUE RETRACTION

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Tissue retraction during surgery variates in force and displacement depending on the assistant and his fatigue. Especially during minimal invasive approaches a steady opening of the wound is preferable. The use of an actively adapting robotic manipulator could ensure a more constant performance. To identify the forces needed for tissue retraction, a series of 45 measurements on cadavers was carried out. The retractor was equipped with a sensor array on both sides, in order to measure the retracting forces and the applied forces on the handle. The data were collected over 2min per measurement. A mean force of 16.5N at the handle was measured corresponding to 214.9N at the tissue due to the lever arm. In average a significant ($p<0.01$) reduction about 10% of the force was shown. Further the variance of the applied force as well as the steepness of force reduction significantly ($p<0.01$) increased during the series of measurements, indicating the growing fatigue of the test person. The holding device also showed a force reduction, due to the passive clamping system and the small friction. In contrast the robot manipulator showed an almost constant performance. During the 2min measurements there was no significant reduction of the applied forces and also no variation over the series of measurements. With these results we can assume that even after a short period the performance of an actively adapting manipulator would be more accurate than a human assistant or a passive holding system.

Abstract no.: 29069

ARTHROSCOPIC TREATMENT OF CHRONIC ANKLE INSTABILITY

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Chronic lateral ankle instability is a condition of perception of giving way, persistent pain and inability to return to sport at pre-injury level, usually following one or multiple ankle sprains. Surgical open procedures such as anatomic reconstruction of the anterior talofibular ligament (ATFL) and tenodesing techniques carry the disadvantages of subtalar stiffness and potential harvesting site morbidity. Recently arthroscopic procedure for the treatment of functional chronic lateral ankle instability have been proposed in order to minimize invasiveness, reduce operating time and allow a faster rehabilitation period. 90 patients with chronic lateral ankle instability and MRI documented ATFL lesions were treated at our Department from 2004 to 2010. Mean age was 32.4 years (range 17-56). All patients underwent a 4-steps surgical procedure including: sinovectomy, debridement of ATFL lesion borders, capsular shrinkage, and immobilization and non weightbearing for 21 days. Patients were examined preoperatively and followed-up prospectively after an average time of 4.7 years (range 1.2-6 years) Clinical assessment included the AOFAS ankle and hindfoot scoring system, Karlsson and Peterson scale, Tegner activity level, Sefton articular stability scale and objective examination comprehending range of motion (R.O.M.), anterior drawer sign and talar tilt test. Objective examination documented a significant improvement in terms of ankle stability. Mean point scales rating improved significantly from baseline and 94% patients rated the success of their surgery as good/excellent. On these bases, we propose arthroscopic treatment as the most suitable method to treat chronic ankle instability in patients with complete ATFL lesion.

Abstract no.: 29071

FIXED-BEARING VS MOBILE-BEARING VS HYPER FLEXED MOBILE-BEARING PROSTHESIS: REVIEW OF LITERATURE

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INTRODUCTION: The design of the mobile-bearing knee was intended to reduce stress on the implant and lowering the risk of tibial component loosening. Hyper flexed mobile bearing prostheses allow more flexion in knee joint, because of bigger posterior offset.

MATERIALS AND METHODS: Our study was designed to find articles that compare functional outcome and survivorship for 3 types of prosthesis. We used bibliography of major arthroplasties textbooks, JBJS (British and American volumes), references of retrieved articles. **RESULTS:** The search identified 138 articles, the follow up for fixed bearing design was 4-11 years, survivorship ranged from 95-98.9%, in mobile-bearing from 3-12 years, survivorship 89-99.1%, and in hyper flexed mobile-bearing 3-5 years, survivorship 95-99%. In summary a review of the evidence-based data demonstrates, that a follow up of 4-11 years do not show significant difference in clinical outcome and survivorship for those endoprosthesis. RSA showed no difference between the 3 designs in the amount of rotation. The authors did not find a difference between the wear debris from the 2 designs. Some studies in vitro demonstrate that the mobile-bearing design is not immune to osteolysis, as has been suggested. **CONCLUSIONS:** The mobile-bearing, fixed-bearing and hyper flexed mobile-bearing TKA designs capable of producing excellent long-term results with excellent clinical outcomes if properly implanted. There is not enough data, especially mid- or long term survivorship and clinical outcome for hyper flexed knee in literature. There is a strong need for a well-designed controlled study comparing the 3 designs.

Abstract no.: 29073

INTRAVASCULAR PAPILLARY ENDOTHELIAL HYPERPLASIA IN THE EXTREMITIES: MRI FEATURES WITH HISTOLOGICAL CORRELATION

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Introduction: Intravascular papillary endothelial hyperplasia (IPEH) is a rare benign vascular lesion which is associated with thrombi. A pure form, IPEH not related to preexisting vascular lesion, occurs most commonly on the finger and the sole. It is usually painful but essentially cured by simple excision. It typically presents as an occasionally tender small mass with red or blue discoloration of the skin. These clinical features mimic hemangioma. The purpose of the present study was to clarify the MR features of IPEH in the extremities. **Materials and methods:** We evaluated the MR images of six patients with IPEH (pure form) in the fingers and the sole. T1- and T2-weighted images were taken in all patients. Gd-enhanced images were taken in three patients. The MRI findings were compared with histological findings. **Results:** On T1-weighted images, the lesions tended to show iso- or slightly high signal intensity with a little gradation. On T2-weighted images, the lesions showed iso- or high signal intensity with irregularity. Peripheral circumferential high signal intensity was observed in five lesions on T2-weighted images. Peripheral enhancement was observed. The histological studies indicated that iso- or slightly high signal intensity with a gradation on T1-weighted images corresponded to thrombi and that peripheral circumferential high signal intensity on T2-weighted images corresponded to endothelial proliferation. **Conclusion:** The present results suggest that the MR features of IPEH in the extremities are iso- or slightly high signal intensity with a gradation on T1-weighted images and peripheral circumferential high signal intensity on T2-weighted images.

Abstract no.: 29075

FIRST EXPERIENCE IN COMPUTER-ASSISTED SURGERY FOR TOTAL KNEE REPLACEMENT: SHORT-TERM STUDY

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INTRODUCTION: In our hospital we started use CAS for TKR in 2008. The goal of the present study was to compare short-term clinical, functional and radiological results of conventional TKR vs. CAS TKR. **MATERIALS AND METHODS:** 102 total knee arthroplasties were performed by four surgeons, 58 with CAS, and 44 without. Preoperative and postoperative clinical examinations were performed at 2 months and 1 year. Pre- and postoperative radiological measurements were evaluated by radiologist. For clinical results we used KSS, Functional Score, VAS. **RESULTS:** There was no significant difference between the CAS group and conventional group with regard to clinical and functional scores in short term results, pain score was slightly higher for CAS group at 2 months postoperatively, however in 1 year it was higher for conventional group. The mean difference in the time of surgery was 18 minutes. Also radiographs revealed no significant differences between the groups. **DISSCUTION:** As we see the clinical and radiological results are the same for the short period of time, but we believe, that CAS provide better precision in component alignment, femoral component rotation, accurate restoration of joint line and posterior femoral offset, better soft tissue balance and stability. **CONCLUSIONS:** CAS used by experienced surgeon provides better limb alignment, which correlates with longevity of implants and improves long term results. For minimal deformity, to minimise release, and for severe deformities, to ensure complete correction by adequate release. For experienced surgeons CAS can improve understanding of biomechanics, and is good teaching device for young surgeons.

Abstract no.: 29076

LONG TERM RESULTS OF UNICONDYLAR KNEE ARTHROPLASTY

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The purpose of this study was to evaluate the long term results of unicondylar arthroplasty procedures. Unicompartmental replacement of the osteoarthritic knee is widely used in both the United States and Europe. The advantages of this concept that only the abnormal joint surfaces are removed, the total amount of excised bone and implanted foreign material is minimal. The patients selected had predominantly unicompartmental disease. Between 1998 and 2005, 214 unicondylar arthroplasties were performed in 185 patients for either osteoarthritis or osteonecrosis at the Orthopedic Department, University of Szeged. There were 153 women and 61 men. The average age was 62 years (range, 49 to 74 years). Only the medial compartment was replaced. No other alternative procedures were done on the patella. When associated patellofemoral osteoarthritis was found total knee arthroplasty was performed. The follow-up examination included the American Knee Society score, physical assessment, and radiological evaluation. Pre- and postoperative radiographs were analyzed to assess further degenerative changes. Our current ten-year survival rate for fixed bearing unicondylar knee arthroplasty is 88%. The unicondylar knee arthroplasty is a less extensive surgical option, which results in a faster postoperative recovery. It is designed to treat knee joints with arthritis limited to one compartment. Additionally, studies have shown that unicondylar knee replacement will, on average, result in better range of motion as compared to standard total knee arthroplasties. Properly selecting the patient for unicondylar knee arthroplasty is important in providing similar long term outcome at ten years as a total knee arthroplasty surgery.

Abstract no.: 29077

**MEDIAL OSTEOARTHRITIS IN ANTERIOR KNEE INSTABILITY:
COMBINED ACL RECONSTRUCTION AND UKA REPLACEMENT**

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The options for treatment of the young active patient with isolated symptomatic osteoarthritis of the medial compartment and pre-existing deficiency of the anterior cruciate ligament (ACL) are limited. The indications for the unicompartmental knee arthroplasty (UKA) are selective. Tibio-femoral misalignment, varo-valgus deformity, overweight, and knee instability are considered to be contraindications. The potential longevity of the implant and levels of activity of the patient may preclude total knee replacement, and tibial osteotomy and unicompartmental knee arthroplasty are unreliable because of the ligamentous instability. Therefore, we combined reconstruction of the ACL and UKA of the knee. Six patients with combined osteoarthritis of the medial compartment and ACL deficiency underwent arthroscopic ACL reconstruction with hamstrings and unicompartmental knee prosthesis. In 2 cases the procedure was done in one step, in 4 patients in 2 steps. Mean age at surgery was 53.6 years. Minimum length of follow-up was 1.5 years. All patients were evaluated using KOOS score, IKDC score, objective examination and standard X-Ray. At the last follow-up, no patients had radiological evidence of component loosening, infection, or knee instability. The subjective and objective outcome assessed with the scale documented satisfactory average results, both in patients of first group and in those of second group. ACL deficiency is advocated to induce knee osteoarthritis due to incorrect knee biomechanics, leading to total knee replacement indication. The combined surgical treatment seems to be a viable treatment option for young active patients with symptomatic arthritis of the medial compartment with a concomitant ACL lesion.

Abstract no.: 29078

AN UNUSUAL MONTEGGIA EQUIVALENT: UNDERSTANDING THE PATTERN WITH MECHANICS AND CHARACTERISTICS

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Abstract: Monteggia fracture dislocations are uncommon childhood injuries comprising of 1.5 to 3% of elbow injuries in pediatric age group. Bado classified the monteggia lesions into four types, over the years investigators have defined various equivalents of these lesions. We present an unusual monteggia equivalent fracture in a 6- year- old boy who sustained displaced fracture of ulnar diaphysis (with 200 anterior angulation) along with ipsilateral supracondylar fracture humerus (gartland type 3- extension type). To the best of our knowledge, this fracture pattern has not been described before in English-language based medical literature. We suggest that the fracture pattern can be included under type I monteggia equivalent on the basis of its displacement characteristics and mode of injury, as discussed in the presentation along with a thorough review of literature. The patient made an uneventful recovery following closed reduction.

Abstract no.: 29080

TREATMENT OF TROCHANTERIC HIP FRACTURES WITH THE USE OF GAMMA-3 NAIL: COMPLICATIONS AND OUTCOMES

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BACKGROUND: Fixation of trochanteric hip fractures using the Gamma-3 nail is widespread and well established procedure. However, serious concerns have been raised recently about the implant's complication rate and especially the risk of a subsequent femoral shaft fracture. Aim of this study is to retrospectively evaluate the complications of the use of Gamma-3 nail for the treatment of trochanteric fractures in our Department.

METHOD: 122 consecutive patients were treated for trochanteric hip fractures between 2007- 2009, using Gamma-3 nail. All patients were retrospectively analysed and complications and outcomes were retrieved from patients' notes. Postop x-rays were evaluated as well. Complications recorded, were technical complications during surgery and postop fracture-related complications. **RESULTS:** Median age was 82y (29y- 97y). Mean follow-up for 1 year (4m- 2y). The fractures according to AO/ASIF classification were: 26 basocervical (31-B2.1), 85 intertrochanteric (31-A) and 11 subtrochanteric (32-A, 32-B). Minor intra-operative complications observed in 15 cases, were not interfered with the excellent final outcome. Postoperatively and during follow-up, 10 complications (8.2%) were detected. The most frequent mechanical complication was the cut-out of the lag screw from the femoral head (6 cases, 4.9%). Other complications, such as delayed union/nonunion and distal screw breakage occurred in 4 cases (3.2%). No femoral shaft fracture was occurred. **CONCLUSIONS:** The use of Gamma-3 nail in trochanteric fractures is a safe method with alow complication rate. The implant use can lead to very good outcome when the correct surgical technique is respected.

Abstract no.: 29081

COMPARATIVE ANALYSIS OF SAGITTAL LUMBAR & PELVIC PARAMETERS BETWEEN YOUNG & OLD AGED GROUPS

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Objectives: To compare the lumbar and sacropelvic alignment of the spine between young normal asymptomatic adults and older asymptomatic adults. Sagittal standing radiographs of the whole spine and pelvis in 239 adult male volunteers (young Group 1 vs. older Group 2) were evaluated prospectively. We excluded volunteers with the history of spine operation, or any other spine abnormality. Group 2 demonstrated larger total lumbar lordosis ($-56.1 \pm 7.5^\circ$ vs. $-52.1 \pm 8.9^\circ$ in group 1, $p < 0.01$), lower lumbar lordosis ($-38.5 \pm 6.6^\circ$ vs. $-32.5 \pm 6.3^\circ$ in group 1, $p < 0.01$), more thoracic kyphosis ($28.5 \pm 7.8^\circ$ vs. $20.8 \pm 7.9^\circ$ in group 1, $p < 0.01$), and T12 Lower EP-H angle ($-20 \pm 5.4^\circ$ vs. $-16 \pm 5.0^\circ$ in group 1, $p < 0.01$). The ratio of lower to total lumbar lordosis in Group 2 ($69 \pm 12.0\%$ vs. $63 \pm 10.6\%$ in group 1, $p < 0.01$) was also higher. T12 plumb to posterosuperior endplate of S1 (-0.8 ± 1.9 cm vs. -2.1 ± 1.6 cm, $p < 0.01$) demonstrated significant difference. There were no significant differences in sacral slope, pelvic incidence and C7 plumb to posterosuperior endplate of S1 and bicoxfemoral. **Conclusion:** Both group showed similar global sagittal balance. Total lumbar lordosis, especially lower lumbar lordosis and thoracic kyphosis were significantly increased in older male compared to younger ones with a similar sagittal vertical axis and sacral slope.

Abstract no.: 29082

**THE USE OF THE SURGICAL DISLOCATION TECHNIQUE IN
TREATMENT OF VARIOUS HIP ARTHROPATHIES**

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Many hip disorders need good exposure of the joint for better dealing with the problem which always causes pain and limitation of motion. The only limit was the high possibility of vascular damage of the femoral head .Ganz et al (2001) describes a technique for surgical dislocation of the hip, based on detailed anatomical studies of the blood supply. We report our experience using this technique in 46 hips over a period of three years. We used this technique for treatment of 16 cases of femroacetabular impingement, 13 cases of chronic slipped capital femoral epiphysis using modified Dunn technique, 12 cases of avascular necrosis of the femoral head using the trap door technique, 2 cases of osteoid osteoma of the femoral neck, 1 case of solitary exostosis at the floor of the acetabulum, 1 case of chondroblastoma of the femoral head, and 1 case of complex fracture acetabulum. Only 1 case developed avascular necrosis of the femoral head, he was a 17 year old boy suffering from chronic slipped capital femoral epiphysis. The technique of surgical dislocation presented in our study allows visualisation of the femoral head of almost 360° and complete access to the acetabulum.

Abstract no.: 29083

**APPLYING OF LOW INVASIVE TECHNOLOGIES OF OSTEOSYNTHESIS
IN CASE OF LONG BONE FRACTURES**

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Aim of our study was to assess methods of biological fixation by using less invasive methods of osteosynthesis with biomechanical features in long bone fractures. We observed 90 patients with long bone fractures in isolated and multiple injuries at the age of 16 to 90 years treated at the Research Institute of Kazakhstan from 2009 to 2010. In case diaphyseal fractures of long tubular bones using intramedullary osteosynthesis with cannulated rods, both with drilling intramedullary canal and without drilling for the shoulder, tibia and femur bones (UHN, UTN, UFN, PFN). Reparative cannulated rods were used for shoulder (UHN) at 18 patients with the humeral fractures. Cannulated shinbone reparative rods UTN were used at 28 patients with fractures of the shinbone. Locking intramedullary osteosynthesis was used at 44 patients with the femur fractures of which in 16 cases the proximal femoral rod (gamma-rod PFN) and in 28 cases reparative (Universal - UFN) cannulated femoral rod was. At first days after surgery the patient began to make motions in joints of damaged limbs. Full range of motions in related joints of damaged limbs recovered after 1 month. Displacement and migration of metal fragments were not observed. Full consolidation of the fracture site was observed in 67 patients according to results followed for one year after surgery. Thus the application of modern methods of lessinvasive methods of biological osteosynthesis allowed us to achieve restoration of motor activity of patients within 12-14 days after surgery. Cases of contractures and joint stiffness were not observed.

Abstract no.: 29085

OUR EXPERIENCE IN REPLACEMENT OF ASEPTIC LOOSENING FEMORAL COMPONENTS OF THE ENDOPROSTHESIS

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Research objective: The Improvement result execution revision operation beside patient with aseptic loosening femoral component endoprosthesis of a hip joint. Materials and methods: From 2001 for 2009 was executed 263 operations to 212 patients on replacement of femoral component cement and cementless fixation. Male patients - 59 (27,83 %), female – 133 (72,17 %). The average age of 64 (21-84) years. Bone allografts were used in 17 cases with large defects. Results: Long term results was study at 118 patients for a mean follow-up of 8,5 (1-16) years. The Harris Hip score improved from an average 34,8 (29-49) preoperatively to 91, 6 (70 to 100) points after a mean follow-up of 8,5 (1-16) years. In 97 % cases good osteointegration in the field of distal component endoprosthesis. The painful syndrome in the field of a femoral component was absent in 83 (70,3 %) cases. Intra - and postoperative complications were observed in 56 cases (21,29 %). Conclusions: Our experience of use endoprosthesis shows need of presence several systems endoprosthesis with different principle fixation. Rational selection implants to different design allows to produce the identical reconstruction even big defects of a hip and to restore joint function.

Abstract no.: 29086

TECHNIQUE AND SHORT-TERM RESULTS OF TREATMENT OF SLIPPED CAPITAL FEMORAL EPIPHYSIS WITH A MODIFIED DUNN PROCEDURE

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Slipped capital femoral epiphysis (SCFE) is a well known disorder of the hip in adolescents that is characterized by displacement of the capital femoral epiphysis from the metaphysis through the physis. Most surgeons advocate in situ fixation of the slipped epiphysis with acceptance of any persistent deformity in the proximal part of the femur because the use of traditional techniques to reposition the proximal femoral epiphysis are associated with a high rate of femoral head osteonecrosis.. We describe the use of modified Dunn technique through surgical dislocation approach for treatment of chronic (SCFE). Between 2008and 2010 13 patient with (SCFE) were treated in ASSIUT University Hospitals 12 of them were males, the left hip were affected in 11 of them, the mean age was 13.8 years (range 13-17). The mean preoperative slip angle was 43 degrees. The mean follow up was 14.2 months (range 10-18).11 patients had excellent results as regard clinical and radiological follow up. The postoperative slip angle was nearly normal. Only 1 patient developed avascular necrosis, he was a 17 years old boy with a fused physis. Another patient developed infection with unknown juvenile onset diabetes. The use of this technique allows restoration of the proximal femoral anatomy, decreasing the rate of secondary osteoarthritis and femoroacetbular impingement, also the use of surgical dislocation approach decreases the incidence of avascular necrosis as compared to other traditional methods.

Abstract no.: 29088

CONCOMITANT DISEASES IN ELDERLY PATIENTS WITH INFECTIOUS COMPLICATIONS AFTER HIP REPLACEMENT

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The purpose is to examine the role of concomitant diseases in elderly patients with infectious complications after hip replacement. The results of treatment of 25 patients have been researched at the fourth Department of the Research Institute from 2001 to 2009. There were 10 men and 15 women. The average age was 67 years. Analysis showed that patients had concomitant diseases before surgery : chronic inflammatory diseases of the urinary system in 22 patients, diabetes - in 2, coronary heart disease, hypertension – in 23 patients, gout - in 1, obesity - in 6, rheumatoid arthritis - in 3 osteochondrosis - in 6. In 10 cases hip replacement was carried out with pseudarthrosis of the femoral neck, in 10 - post-traumatic coxarthrosis, in 3 - rheumatoid arthritis, in 2 - aseptic necrosis of the femoral head. Patients preoperatively have been made corresponding adjustment of somatic pathology followed by surgical treatment. Sanitation with prosthesis preservation was made in 18 cases, the removal of one component of the endoprosthesis – in 2, implant removal and installation of a cement spacer – in 2. The results of treatment were studied in a period of 1 to 7 years. At 12 patients the postoperative period was uneventful, in 9 - healing by secondary intention, in 4 - relapse of chronic osteomyelitis. Concomitant somatic pathology in elderly patients with infectious complications after hip replacement has an important role in the postoperative period, and timely correction allows us to obtain positive results in 84% of cases.

Abstract no.: 29089

**EVALUATION OF THE ROLE OF DEBRIDEMENT IN THE MANAGEMENT
OF GRADE I OPEN FRACTURES OF TIBIA**

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Tibial diaphyseal fractures are the most common type of long-bone fracture encountered by most orthopaedic surgeons, and due to its peculiar anatomy it is more prone to open injury. The standard recommendation for the management of open fractures irrespective of grade or severity has been copious irrigation and debridement followed by soft tissue cover. Recently it has been suggested that debridement may not be necessary for the initial management of low energy type I open fractures and the outcomes are likely to be similar to the ones subjected to debridement. A prospective study for the treatment of Type I open fractures as classified by Gustilo and Anderson in 1989, comprising of twenty patients of isolated Type I open fractures of the tibia was conducted, with the aim to study the outcome following surgical debridement in isolated Type I open fractures of tibia. Analysis of the data obtained during the present study clearly shows that in so far as the tibial fractures are concerned, with minimal soft tissue injury, they heal equally well and in about the same time (mean 13.3 days) when managed by a surgical debridement or by simple irrigation and aseptic dressings under similar broad spectrum antibiotic cover.

Abstract no.: 29093

THE FUNCTIONAL PROGNOSIS FACTOR OF INTERNAL HEMIPELVECTOMY; PRESENTATION

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Objectives: Currently, internal hemipelvectomy (IH) is one of the standard treatments for malignant pelvic tumors. The purpose of IH is complete tumor resection with functional limb sparing. Previously reconstruction procedures have been discussed, but not the functional prognosis factors of IH. We evaluated the results of upper pelvic ring resection cases, basically our modified Enneking's type I and I/IV IH resection cases in terms of functional prognosis factors by MSTS score. **Patients:** From 1996 to 2010, 12 cases of IH were performed. The pelvic ring reconstructions were performed in 9 cases. Pelvic wing resections without any reconstruction were performed in 3 cases. **Results:** The average rating of MSTS score was 77.8 %. The mean operation time was 2 hrs 50 mins and 5hrs 18min for reconstruction or non-reconstruction group respectively. The mean free weight bearing time was 30 weeks and 12 weeks for reconstruction or non-reconstruction group respectively. Local recurrence occurred in 2 cases in reconstruction group and single case in non-reconstruction group. All recurrent tumors arose in gluteus maximus, requiring wide resection without skeletal resection. The two poorest prognosis cases with MSTS score under 60% were recurrent cases. Only tumor recurrence reached statistical significance, the p value was under 0.05. The other factors did not affect the functional prognosis. **Conclusions:** Our results demonstrated that the tumor recurrence was only statistical significant factor of functional prognosis. Following research is required to demonstrate proper IH in terms of functional prognosis.

Abstract no.: 29094

**ANTERIOR APPROACH TO THORACIC AND LUMBAR SPINE LESIONS:
RESULTS IN 25 CONSECUTIVE CASES**

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Introduction: Early report on a series of 25 consecutive patients with different types of spine lesions surgically treated via an anterior approach (AA) at the thoracic and lumbar levels during the past 3 years. Indications, techniques, and surgical results are described.

Methods: This series included 3 patients with fractures, 3 with neoplasms, and 19 with spinal infections. Based on the lesion to be addressed, the AA was used for lesion excision, corpectomy, vertebral body reconstruction with cages, realignment, and/or plating or screwing. All infection patients were ultimately proven for tuberculosis. In 12 patients, neural decompression and spine stabilization were achieved anterior approach with moss Miami fixation, whereas 13 patients were treated using AA approach with only auto fibular graft. The authors developed a simple radial resection of diaphragm for dorsolumbar junction. **Results** There were no deaths and no instances of major surgery-related morbidity. Neurological improvement was reported in all tubercular patients. Postoperatively, all patients were able to stand or at least sit without major discomfort. There were no cases of failure, fracture, dislocation, or bending of the anterior instrumentation. **Conclusion** The anterior route provides direct access to most spine diseases and allows optimal neural decompression and the possibility of adequate realignment and strong reconstruction/fixation. Stability of the vertebral column is achieved, resolution of clinical pain is rapid and almost complete, and the rate of surgical complications is very low. The option for using the alone fibular graft alone without any instrument approach is viable.

Abstract no.: 29096

CORONAL SHEAR FRACTURES OF THE DISTAL END OF THE HUMERUS

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Coronal shear fractures of the distal humeral end ((CSF) are uncommon. Results of treatment of these fractures will be presented. Materials & Methods: Between 2005 and 2009, 4 patients (all females) were treated for CSF (Dubberley's type 3B: 3cases, 2A: 1case) at our hospital. The average age of the patients was 59 years (range, 54 to 65 years). The average interval between an injury and surgery was 8 days (range, 5 to 10 days). All patients were managed with open reduction and internal fixation with Herbert type screws (supplementary fixation with K-wires in 2 cases). The average duration of the elbow immobilization was 5.4 days (range, 2 to 10 days). The average duration of follow-up was 4.5 months (range, 3 to 7 months). Results: The fracture united in all patients without radiographic evidence of osteonecrosis of the fracture fragments. In two cases capsulotomy was done simultaneously with removal of screws, 3 months after first operation. At final follow-up, flexion of the elbow averaged 130 degrees (range, 120 to 140), with an average flexion contracture of 15 degrees (range, 10 to 25). Conclusion: 1) CSF is a complex fracture. 3D –CT is recommended to evaluate the exact type of fracture. 2) Fixation with K-wires, in addition to Herbert screw may be needed in some types of fractures with comminution. 3) Gain of good ROM after surgery may be difficult in these fractures even with early postoperative mobilization.

Abstract no.: 29097

LARGE DIAMETER HEAD IN TOTAL HIP ARTHROPLASTY IN ASIAN PATIENT: A MYTH OR REALITY

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Background: Larger diameter femoral heads have emerged as a valuable tool in the arsenal against dislocation in total hip arthroplasty. Large head improves hip function by joint restoration that is closer to its natural anatomy, maximizing the range of motions and reduced potential for postoperative dislocation. **Material & Methods:** We reviewed 120 patients (140 hips) retrospectively with varying diagnoses and indications but all of whom received large-diameter femoral head either as a metal-on-metal or metal on high cross linked polyethylene prostheses. Posterior approaches was used in al the cases. **Results:** Average age at time of surgery was 40.9 years and average follow-up was 9 months. There were 133 (96.4%) primary procedures, 5 (3.57.0%) conversion procedures, and 2 (1.42%) revisions. The most common preoperative diagnoses included osteoarthritis (92 hips). Rheumatoid arthritis (20 hips), ankylosing spondylitis (20 hips) and avascular necrosis (8 hips). The average preoperative Harris Hip Score was 37.5 points and was 90.8 points at final follow-up. 135 hips were radiologically stable and 5 hips had dislocation, which were managed by revision of acetabular components. Loosening, migration, or osteolysis was not observed in any patients. **Conclusion:** Our experience has shown good early results with large heads in total hip arthroplasty. Large heads with greater stability and improved range of motions are promising solution for mobile hip in Indian patients, who can not afford revision surgeries and require extra movements for religious activity.

Abstract no.: 29099

CLINICAL EVALUATION OF PALMAR LOCKING PLATE IN DISTAL RADIUS FRACTURE

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Introduction: Distal radius fracture is the most common fracture among various age population. This study aimed at clinical evaluation of applying volar side, locking plate (AO, Synthes) in distal radius fracture patients.
Materials and Methods: From 2009 Jan to 2010 Jan. One hundred patients were included in this prospective study that used volar site locking plate for distal radius fracture. (Male: Female=32:68) Patients were included in the study when one or more of the instability criteria were met .Patients with severe associated injuries were excluded from the study. Postoperative management included early active mobilization out of the splint postoperatively under the supervision of a hand therapist. Functional evaluation was recorded by using Gartland and Werley's score and regular roentgenograms.
Result and Conclusion: The function result was excellent in 15 (17%) patients, good in 29 (33%) patients, fair in 35 (40%) patients, and poor in 9 (10%) patients. All patients with bony union uneventful except 2 patients who lost of the initial reduction and received revision surgery. The mean score was 9.2 points. In our series, the functional results of the dorsal comminuted fracture group were similar to dorsal cortex intact group. The radiographic parameters such as volar tilt (>0) and radial inclination (>160) were important predictors of functional outcomes. We suggested that palmar plating with locking screw insertion is an effective and useful treatment option in distal radius fracture. We believe that an early mobilization program contributes to the high patient satisfaction in our study.

Abstract no.: 29101

ULNAR NEUROPATHY AS THE FIRST SYMPTOM OF PANCOAST SYNDROME

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Introduction: Carcinomas of the upper lung sulcus produce Pancoast syndrome, thus causing pain in the shoulder and along the ulnar nerve distribution of the arm and hand.

Aim: The presentation of a case of Pancoast syndrome with initial clinical findings of ulnar neuropathy in a 65 years old man. **Method:** A 65-year-old man complained of numbness and tingling into his right forearm extending to the tips of his fourth and fifth fingers. Neurological examination revealed a decreased appreciation to pin prick along the eighth cervical and first thoracic dermatomes. Electromyography showed ulnar neuropathy. After a month he felt pain on his right arm. He had short-term relief from taking hot showers but not from any medication. The pain was intolerable. We proposed hospitalization for further examination. During clinical examination a little marked swelling in the supraclavicular region was noted. A neck and thorax CT scan showed a soft tissue mass in the right lung apex with destruction of the first rib. The bone scan showed increased uptake in this area. **Results:** The CT scan put diagnosis of Pancoast tumour of the upper lung sulcus. The patient was send to thoracosurgery ongological center for treatment. **Conclusion:** Although Pancoast is a lung tumor, pulmonary symptoms are rare and delayed. Pancoast syndrome should be always included in the differential diagnosis of ulnar neuropathy.

Abstract no.: 29103

INTERNAL EXTRAPEDICULAR FIXATION DURING THE TRAUMATIC THORACIC SPINE INJURIES

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The main features that limit the usage of the standard transpedicular fixation in the thoracic spine are the following: the small horizontal diameter of the arch root, lack of space between the wall of the arch root and dura mater of spinal cord and the wide variability of the anatomy of the dorsal vertebrae structures. Since 1995 the Republic Spinal Center applies the extrapedicular methodic of the introduction of the screws into the thoracic spine. The advantages of this technology can be considered the increase of the screw stability in the bone, the ability of usage of the screws of the required parameters irrespective of the size and location of the arch root and decrease of probability of nerve structures damage. The new surgical technology of the extrapedicular thoracic spine screw fixation has been developed, that is remarkable for security of the surgical intervention and provides a significant improvement of the treatment results and the quality of life of the patients. Optimal parameter of the extrapedicular screw fixation technology with consideration of the biometrical and anatomic-topographic peculiarities of the thoracic spine has been determined. The high security and effectiveness of the suggested ESF technology has been proved on the basis of the analysis of the immediate and follow-up results of its clinical application with the use of the high-quality methods of the CT and MRI. The scientific novelty of the developed surgery technology is confirmed by the patent of the Republic of Belarus № 7068.

Abstract no.: 29105

PITFALLS IN IMAGE EXCHANGE IN ACUTE TRAUMA CARE – LESSONS LEARNED

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Introduction: In acute trauma, fast and adequate treatment is extremely important. Expert advice is often needed. To alleviate image exchange between trauma hospitals, a special online portal was developed and tested in 6 different hospitals. Over a period of 4 months we wanted to identify critical requirements for such a tool. **Method:** From August to December 2010 26 image transfers were initiated by the hospitals, averaging 1.5 transfers per week. In each hospital the tool was introduced with training for the physicians. 5,686 different images were exchanged during these transfers. We recorded any technical and user problems that occurred during this period. **Results:** No technical problem occurred during the test period. When the users logged into the tool they found it easy to use and only a few questions came up. However, the users frequently forgot how to start the tool and their password. Also a direct import / export from an existing PACS was missed by the users. **Conclusion:** The critical success factor for an online image exchange tool is its user acceptance. Such a tool can fail even if it is functioning perfectly technically. It is not a tool used in the daily work, so its use will not become daily routine. In addition, personal will change over time. The physicians need to be actively reminded of its existence and the use of this tool must be straight forward. Alternative ways of secure and easy identification need to be considered.

Abstract no.: 29108

LONG-TERM RESULTS OF HIP ARTHROPLASTY IN FEMORAL NECK FRACTURES AND NONUNIONS

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Outcomes of 172 patients (63 men, 119 women) treated in our clinic from 2000 to 2009 with femoral neck fractures and nonunions were analyzed. 73 patients (26 men, 47 women) with femoral neck fractures and 99 patients (38 men, 61 women) with femoral neck nonunions underwent hip replacement. Age of patients ranged from 58 to 94 y.o., an average age was 78,3 y.o. All 73 femoral neck fractures (a mean age 78,2 y.o.) were classified as IV type fractures by Garden classification. Remoteness of trauma in fracture group ranged from 1 to 17 days. A mean age of patients in nonunion group was 74,9 y.o. Remoteness of trauma in this group was from 3 months to 7 years. Before arthroplasty 41 patients underwent different methods of fixation after femoral neck fractures. Hemiarthroplasty with unipolar constructions was performed 141 patients: 62 in fracture group, 79 in nonunions group. Total arthroplasty were performed in 31 patients: 12 in fracture group, 19 in nonunion group. All patients were followed up at least 1 year after surgery. Long term results of treatment of two groups assessed by Harris Hip score. A mean score in fracture group was 82,3; a mean score in nonunion group was 76,6. Conclusion: Hip arthroplasty in femoral neck fractures and nonunions in elderly and old patients allows early activate patients, prevents progressive deterioration of general condition of patients.

Abstract no.: 29116

CT EVALUATION OF GRAFT TO BONE UNION AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION WITH BONE-PATELLAR TENDON-BONE AUTOGRAPH

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The aim of this study was to evaluate the integration between the bone of graft and tibial and femoral bone tunnel using CT after ACL reconstruction with BPTB autograft. We examined 29 patients who underwent ACL reconstruction with follow-up of 1 year. All ACL reconstructions were performed with BPTB autograft. We evaluated the graft to bone union pattern in both femoral and tibial bone tunnels on the reconstructed oblique coronal and sagittal images of CT. Rotational laxity of the knee was evaluated using the pivot-shift test under general anesthesia in postoperative 1 year. Graft to bone union in bone tunnel was seen at least partially with all patients in femoral and tibia bone tunnel. The completely closed bone tunnel on both coronal and sagittal images was seen in femoral of 4 patients and in tibia of 1. The completely closed bone tunnel on either coronal or sagittal image was seen in femoral of 12 and in tibia of 10. The partial union on both coronal and sagittal images were seen in femoral of 13 and in tibia of 18. Rotational laxity of the knee was significantly greater in the patients of partial union both oblique coronal and sagittal with reconstruction CT than in the patients of completely closed both oblique coronal and sagittal and either oblique coronal or sagittal on the femoral side. Graft to bone union pattern had significant impact on rotational laxity of the knee on the femoral side.

Abstract no.: 29117

**QUALITY OF LIFE AND ASSESSMENT OF FUNCTION BY PATIENTS
AFTER INFECTION-RELATED REVISION HIP ARTHROPLASTY**

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Objectives: The aim of this study is to show outcome after revision surgical procedures by patients with infection after primary hip arthroplasty. **Methods:** In period from 2005- 2008 we evaluated 20 patients who underwent revision surgical procedure in two stages at the Clinic of Orthopaedic surgery and Traumatology, Clinical Center of Serbia in Belgrade. The patients were evaluated six months, one year and two years after surgical procedure. The main outcome measurements were Harris Hip Score in assessment of function and SF-36 questionnaire was used to assess the quality of life. **Results:** The study is finished with 17 available patients. The average age was 58 ± 3 (51-66) for woman and 59 ± 6 (51-69) for men. By 9 patients initially were implanted partial prosthesis and by 8 patients a total hip replacement was performed (four were cementless, two were hybrid type of prosthesis and two were cemented). Based on the histological finding and wound sample by 8 patients *Staphylococcus epidermidis* has been founded. Six months after surgical procedure 14 patients showed significant improvement, according to clinical findings and laboratory values. Two patients showed improvement after one year and one patient showed the signs of infection even after two years. SF 36 i Harris Hip Score showed statistically significant improvement in all parts. **Conclusion:** The results of our study show that revision procedure after infected primary hip arthroplasty is effective treatment option. The appropriate surgical technique, optimal use of antibiotics and patient compliance are necessary for successful treatment.

Abstract no.: 29118

RESULTS OF SURGICAL TREATMENT OF PATIENTS WITH PROXIMAL FEMUR FRACTURES AFTER TWO YEARS OF FOLLOW-UP

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OBJECTIVE: The objective of this study was to evaluate the treatment outcome by patients with proximal femur fractures two years after fracture **METHODS:** In this study we evaluated 100 patients with fracture of femoral neck (group I) and 100 patients with trochanteric fractures (group II), who underwent surgical procedures at the Clinic of orthopaedic surgery and traumatology in Belgrade. For the assessment of outcome we evaluated mortality, complications rate and quality of life (SF 36) **RESULTS:** In group I by 91 patients biarticular prosthesis has been implanted and by 9 patients monarticular partial prosthesis has been implanted. In the group II by 95 patients we performed open reduction and internal fixation by DHS system and by 5 patients an osteosynthesis by plate has been done. Two years after fracture the mortality rate in group I was 37% and in group II was 40%. In the group I we had a prosthesis loosening by 24 patients. In the group II the most common complication was migration (by 33 patients). There is statistically significant difference in the quality of life after two years. **CONCLUSION:** We founded no significant difference in mortality rate between two groups and the rate is high in both groups. But the results of our study suggest that surgical treatment of hip fractures by elderly is the treatment of choice. Patients are capable of early activation and this is the most important factor for better quality of life.

Abstract no.: 29119

FIBULAR RESECTION – WHITHER IS SAFE?

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Objective: Morbidity following fibula resection has not been fully studied. We aim to evaluate long-term donor-site morbidity following fibular resection and evaluate their relation to length and site of fibula harvested. **Methods:** 78 fibular donor sites in 77 patients who underwent fibular resection were reviewed. Patients with pre-existing ipsilateral lower limb pathology were excluded. **Results:** Reconstruction for tumor resection was the most common indication. Mean age-30 years (3-65 years); 47 males, 30 females; follow-up was 5 years (1-16 years). Mean fibular length resected-12.4cm (4-29.5 cm). Patients were grouped into three based on length and site of resection: A: <12cm (N=36); B: ≥12cm (N=29); C: proximal fibular resection of any length (N=13). There was no case of distal fibula resection. Eight patients had subjective symptoms. 16 patients had varus knee laxity (20.5%) and 3 had neuromuscular complications. Varus laxity was more common in Group C (69%) than Group A (6%) and B (17%). Fibular head resection was associated with significantly higher risk of knee varus laxity ($p<0.000$). Length of fibula resected was not associated with varus laxity. None had >1 cm laxity to warrant treatment. There was no ankle instability. Complete fibula regeneration was seen in 3 children. Tibio-talar angle and medial ankle joint space were not significantly different compared to normal side. Overall patient satisfaction was good. **Conclusion:** Donor site morbidity following fibular resection is low. However the proximal end should be preserved whenever possible to avoid knee laxity and alteration in biomechanics.

Abstract no.: 29128

GEOMETRIC STRUCTURE OF SPINAL CURVES: APPLICATION TO ASYMPTOMATIC SUBJECTS AND TO PATIENTS WITH DEFORMED SPINE

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The spinal pattern of asymptomatic subjects is generally described using sagittal radiographic images. Frontal radiographic exposures allow clinical people to access to spinal deformations due to scoliosis. Biplanar radiographic examination, coupled with photogrammetric reconstructions, may be used for reconstructing the 3D spinal curve. This paper presents a new study of the geometric structure of 3D spinal curves. The spine is considered as an heterogeneous beam, and is modeled as a deformable wire along which vertebrae are beads rotating about the wire. Each vertebra can rotate about the 3D spinal curve. 3D spinal curves are compound of plane regions connected together by zones of transition. The 3D spinal curve is uniquely flexed along the plane regions. The angular offsets between adjacent regions are concentrated at level of the middle zones of transition. The plane regions along the 3D spinal curve must satisfy two criteria: i) a criterion of minimum distance between the curve and the regional plane and ii) a criterion controlling that the curve is continuously plane at the level of the region. The geometric structure of 3D spinal curve is characterized by the sizes and orientations of regional planes, by the parameters representing flexed regions and by the sizes and functions of zones of transition. Spinal curves of asymptomatic subjects show three plane regions corresponding to spinal curvatures. In some scoliotic spines, four plane regions may be detected. Our group of research developed techniques for accessing to the 3D representation of spinal curves from the treatment of biplanar radiography.

Abstract no.: 29129

ACCESSING TO PELVIC ARTICULAR SURFACES IN UPSTANDING PATIENTS DEFINED FROM BIPLANAR RADIOGRAPHY

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The pelvis connecting back to femurs participates actively to the transmission of movements and forces. The knowledge of patterns of pelvic joints with adjacent bones L5 vertebra and femurs is essential for studying patient stable postures and movements. 3D pelvis articular surfaces have been previously located, in bone specimens, from photogrammetric techniques. The 3D modeled articular surfaces were reconstructed from their 2D edge projections. This method is presently applied to radiographs of volunteers. Articular surface are modeled by simple geometric figures. L5 lower endplate and sacral plate are supposed to be strictly plane. Acetabular cavities are represented as hemispheres. The femoral head and neck of upper femur is modeled as a sphere linked to a trunk of cone. Lower and sacral plates, so as acetabular cavities are bounded by elliptic or circular edges. Modeled edges are projected on each radiograph, and fitted to corresponding edge contours. One local set of axis is affixed to each articular surface is located versus the fixed coordinate system. The pattern of L5/S1 joint is described by the relative position of the L5 lower endplate versus the pelvis sacral plate. Hip joints are modeled by the relative position of each upper femur with respect to the corresponding acetabular cavity. Relative positions of pelvic articular surfaces versus pelvic frame are supposed to be constant in case of pelvic displacements. Positions of acetabular cavities and sacral plate versus pelvis coordinate system characterize the pelvic morphology. Examples show effects of pelvic morphologies upon postural feature of subjects.

Abstract no.: 29131

REVIEW ON PONSETI METHOD OF CLUBFOOT MANAGEMENT

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Aim of this study was to review the initial experience in managing congenital club feet by the Ponseti method. Method: Retrospective review of case notes of 49 club feet (31 patients) treated by Ponseti method over a period of 7 years (2000 to 2006). Our inclusion criteria were completion of manipulation and serial casting phase of the treatment. The average duration of follow-up was 31 months (range: 4 months to 76 months). Pirani Score used to follow up the results. Results: Full Correction (Pirani Score: 0) obtained in 80% feet. 59% of cases achieved full correction without any surgical procedures. 39% of cases were non compliant with AFO. Residual deformities, further casting/surgeries were found to be higher in the AFO non compliant group as well as in the Achilles Tenotomy positive group. Referred cases required higher no: of surgeries compared to the ones started at our hospital. Conclusions: Our short term results agree with the results quoted in literature. We achieved full correction in 50% of complex club feet. Further studies with control required to verify this.

Abstract no.: 29135

ISOLATED PYOMYOSITIS OF RECTUS ABDOMINIS MUSCLE: AN UNUSUAL TUBERCULOUS PRESENTATION

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Abstract: Pyomyositis is usually caused by pyogenic organisms, especially in the immunocompromised hosts. Pyomyositis of tuberculous origin is a rare entity usually caused as an extension from neighbouring bones and joints. Isolated (primary) tuberculous pyomyositis without underlying osseous lesions or primary focus may be considered as even rarer. We present a case of 16-years-old adolescent boy who was diagnosed with isolated (primary) tuberculous pyomyositis of left rectus abdominis near its proximal attachment. The clinical presentation, imaging features (radiographs, US, CT, MRI), differential diagnosis and treatment are presented along with literature review. To the best of our knowledge such presentation has not been described before in English-language based medical literature. The patient made an uneventful recovery following antitubercular chemotherapy alone.

Abstract no.: 29137

PSEUDOANEURYSM OF THE ANTERIOR TIBIAL ARTERY – A RARE COMPLICATION OF PROXIMAL TIBIAL STEINMAN PIN INSERTION

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Anterior tibial artery pseudoaneurysm is rare and unexpected complication of Steinmann Pin insertion. We describe the case of an 18 year old boy who sustained such injury to anterior tibial artery in this procedure. Diagnosis was confirmed on an MR Angiogram. Aneurysmal sac excision with lateral repair of the vessel wall was performed. Post-operatively good flow was documented on a follow-up MR Angiogram. This case highlights a major and unexpected complication of a so called minor procedure, not previously reported in the literature. Too posterior pin placement in the proximal tibia should be avoided to prevent such injuries.

Abstract no.: 29140

PRE-OPERATIVE TEMPLATING OF ELECTIVE TOTAL HIP REPLACEMENT USING TRAUMACAD SOFTWARE

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Introduction: Pre-operative templating has become an essential aspect of pre-operative preparation for elective total hip replacement. The techniques involved have evolved from acetates used with analogue radiographs to digital processes. This study audits the accuracy of the TraumaCad software in total hip replacement at two centres in the same trust. **Methods:** The pre and post-operative radiographs of 40 patients undergoing total hip replacement by a single surgeon at a district general hospital were retrospectively reviewed. Patients that had templating of their digital Picture Archiving and Communications Systems (PACS) pelvic images using the TraumaCad software programme (Orthocrat Ltd, Petach-Tikva, Israel) were included. The templated acetabular component and femoral stem was compared to the actual size of acetabular and femoral prostheses inserted at surgery. **Results:** The acetabulum was accurately templated in 38.9% of the hips and within ± 1 size in a further 44.4% (total 83.3%). The femoral stem size was accurate in 27.8% of the hips and within ± 1 size in a further 52.8% of the hips (total 80.6%). Such a variation is likely due to the variable positioning of the calibration ball. **Conclusions:** TraumaCad is a useful tool in the pre-operative templating of hips successfully predicting the prosthesis components within ± 1 size in the majority of hips studied. However, it should not be relied upon as an absolute measurement of the size of prosthesis to be used, rather be used as a suitable guide to intra-operative stages such as the femoral neck cut position.

Abstract no.: 29144

**DUAL-FIBULAR RECONSTRUCTION OF A MASSIVE TIBIAL DEFECT
AFTER EWING'S SARCOMA RESECTION IN A PEDIATRIC PATIENT
WITH A VASCULAR VARIATION**

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Background: Treatment of Ewing's sarcoma in recent years has significantly evolved. For those patients under intense chemotherapy and with massive bone loss, free vascularized fibular grafting is currently advocated as a reliable reconstructive option, maybe due to the controversial results of bone transport in similar situations. However, when vascularity of either the recipient or donor extremity depends on the vessels used for anastomosis, microsurgical procedures are not feasible. **Methods:** We present the case of a 13-year-old female patient with a Ewing's sarcoma of the right tibia. A preoperative angiography revealed that vascularity of the affected side depended on a single peroneal artery. The patient was treated with multiagent chemotherapy, followed by an excision of 23 cm. Defect was bridged by gradual medial transportation of the ipsilateral fibula with the Ilizarov technique and strengthened by non-vascularised transfer of the contralateral fibula. **Results:** Total external fixation time was 162 days. At 5 years postoperatively there was no recurrence of the malignancy. The patient had full weight-bearing ability on the affected limb, without any limb length discrepancy or axial deformity and with preservation of ankle and knee joints motion. **Conclusion:** Transverse distraction osteogenesis of the ipsilateral fibula demonstrated unproblematic callus formation under chemotherapy. Supplemented with non-vascularised transfer of the contralateral fibula, provided a reconstructive option with biologic affinity and sufficient biomechanical durability. This case report presents a viable option, especially in cases where vascular abnormalities of either the donor or the recipient limb, combined with multiagent chemotherapy, restrict potential reconstructive alternatives.

Abstract no.: 29146

**HOW ACCURATELY DOES POSTOPERATIVE CAM DEFORMITY
REPRESENT INTRA-OPERATIVE FRACTURE REDUCTION IN PATIENTS
WHO UNDERGO INTERNAL FIXATION FOR INTRACAPSULAR HIP
FRACTURE?**

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For patients who undergo internal fixation of intracapsular hip fracture, the presence of CAM deformity on first postoperative lateral radiograph is associated with a significantly higher incidence of revision (28%) compared to those without CAM (7%), $p=0.02$. Our aim was to determine how accurately postoperative radiography represents intra-operative fracture reduction. Hip radiographs were reviewed for all patients treated with internal fixation for intracapsular hip fracture by our Department between March 2007 and January 2010 ($n=119$). Patients without intraoperative lateral radiography and lateral radiograph within 6 weeks postoperatively were excluded. For included patients ($n=42$) the intraoperative and postoperative lateral radiographs were reviewed for the presence of CAM deformity, defined as an anterior offset ratio of less than 0.17. The majority of patients were female ($n=29$) of mean age 73 years (30-96). 98% of fractures were undisplaced. All were treated with three parallel cannulated screws. Intraoperative CAM deformity was present in 61% of patients ($n=25$). In all cases this was in agreement with the postoperative radiograph. There was no evidence of CAM deformity on intraoperative fluoroscopy of 17 patients. 4 of these patients did have CAM deformity on first postoperative radiograph. The mean difference between intraoperative and postoperative anterior offset ratio was 0.033 (range 0-0.11). Our results show that postoperative lateral radiograph within 6 weeks of surgery accurately reflects the intraoperative reduction. Therefore we recommend restoration of anterior offset intra-operatively to reduce the incidence of revision surgery.

Abstract no.: 29151

OUTCOMES FOLLOWING RESURFACING HEMIARTHROPLASTY OF THE SHOULDER USING THE GLOBAL C.A.P.

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Purpose: Shoulder replacement is widely employed to treat severe shoulder joint disease accompanied by pain and functional limitation unresponsive to conservative measures. The purpose of this study is to assess outcomes and complications of shoulder resurfacing hemiarthroplasty using the Global CAP (Depuy). Method: We retrospectively reviewed patients treated between September 2005 and July 2010. There were 44 procedures on 41 patients (3 patients underwent bilateral procedures at different times). Functional outcomes were assessed using the Oxford Shoulder Score. Patient satisfaction was assessed using a 10cm visual analogue scale (VAS). Results: In our series there were 13 male (31.7%) and 28 female (68.3%) patients, with an average age of 71.9 years (40.4 – 91.2). Indications were osteoarthritis (90.9%) and rheumatoid arthritis (9.1%). The dominant side was resurfaced in 23 (52.3%) cases. Average length of stay was 1.98 days with average follow up time before discharge of 10.9 months. There were 13 (29.5%) complications; 4 (9.1%) frozen shoulder (all responded well to MUA), 4 (9.1%) persistent pain (3 responded to treatment, 1 revised), 2 (4.5%) poor function, 1 (2.3%) brachial plexus injury, 1 wound infection, 1 mortality. 32 (80%) patients returned questionnaires. 71.9% of patients would repeat the procedure and 81.3% would recommend to others. Mean Oxford score was 29.3 and mean VAS 7.02. Conclusion: Patients found Global CAP shoulder resurfacing hemiarthroplasty highly beneficial and would recommend the procedure to others.

Abstract no.: 29171

**FIRST META-TARSO PHALANGEAL JOINT FUSION USING FYXIS PLATE
– OUR EXPERIENCE IN A DISTRICT GENERAL HOSPITAL IN SOUTH WALES, UK**

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Introduction: Fusion of the first metatarso-phalangeal joint is considered as a gold standard procedure for arthritis and a salvage procedure for previously failed surgeries. This study presents our experience with fyxis plate for first MTP joint fusion. **Materials and methods:** We performed 40 first MTPJ fusions in 37 patients between June 2007 and June 2010 using fyxis plate and compression screws. We analysed the outcome in terms of fusion rate, AOFAS Hallux score, radiological parameters (including hallux valgus angle, dorsiflexion angle, great toe length) and complication rate. The average period of follow-up was 15 months (6-24 months). **Results:** The average age of the patient was 58 years and 64.8% of them were females. The most common indication for surgery was hallux rigidus (77.5%), 20% of them had severe hallux valgus secondary to rheumatoid arthritis and 1 patient had a failed sialastic prosthesis. The average hallux valgus angle (HVA) was 13 degrees (6-44 degrees) pre-operatively and 9 degrees (8-14 degrees) post-operatively. The dorsiflexion angle was 24 degrees (20-27 degrees). The mean fusion duration was 3.8 months. 90% of them had only 1mm shortening. The AOFAS hallux score was 30 pre-operatively and 82.2 post-operatively (maximum 90). There was no non-union. Two patients had superficial infection which settled with antibiotics. The patient, who had fusion for failed sialastic prosthesis, had deep infection and the metal work had to be removed. **Conclusion:** These results show that the first MTPJ fusion using fyxis plate has a high subjective and objective satisfaction.

Abstract no.: 29172

**POSTEROMEDIAL APPROACH FOR REDUCTION AND STABILIZATION
OF POSTEROMEDIAL FRAGMENT IN TIBIAL PLATEAU FRACTURE**

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Introduction: Tibial plateau fractures require different approaches according to initial fracture pattern. Most classifications do not describe sagittal plane fragments. The posteromedial fracture fragments are secondary to a combination of varus over an axial load with knee hyperextension. The incorrect interpretation of the fracture pattern can lead to an incorrect approach. The aim of this study is describe the posteromedial approach for the posteromedial fragment of tibial plateau fractures and show our experience. **Methods:** Between January 2005 and March 2009 were evaluated 18 patients who were surgically treated with posteromedial approach for posteromedial fracture fragments of the tibial plateau. Eleven male and seven female. The average age was 38.9 years. No fracture was exposed. Fourteen fractures were bicondylar. **Results:** Average follow-up was 16.1 months, there were not perioperative complication. There were no nonunions or malunion. We evaluated the quality of reduction following DeCoster, having seven anatomic reductions, eight good and three regular reductions. **Conclusion:** We believe that posteromedial approach for treatment the posteromedial fracture fragments of the tibial plateau is highly effective and reproducible, providing a satisfactory vision for correct surgical treatment.

Abstract no.: 29173

SCARF OSTEOTOMY FOR ADULT HALLUX VALGUS DEFORMITY: OUR EXPERIENCE IN A DISTRICT GENERAL HOSPITAL IN SOUTH WALES, UK

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Introduction: Many procedures have been documented in the literature for correction of adult hallux valgus deformity. We present our experience of Scarf osteotomy with soft tissue release for correction of this deformity. **Materials and Methods:** We performed 48 Scarf osteotomies with soft tissue release in 41 patients with hallux valgus deformity between June 2007 and June 2010. The osteotomy site was fixed with two Barouk screws. We evaluated the results with respect to AOFAS hallux score, radiological parameters (including hallux valgus angle, intermetatarsal angle) and complication rate. The average period of follow-up was 13 months (8-31 months) **Results:** The mean age of the patients was 52 years and 66.7% of them were females. The average hallux valgus angle was 38.1 pre-operatively and 12.8 post-operatively. The mean inter-metatarsal angle was 17.0 pre-operatively and 6.8 post-operatively. The average AOFAS hallux score was 55.7 pre-operatively and 91.6 post-operatively. Akins osteotomy was performed in 6 of the patients. Three patients had superficial infection which subsided with antibiotics. Nine patients had decreased sensation on the medial aspect of the great toe. One patient developed chronic regional pain syndrome. **Conclusion:** Scarf osteotomy is a reliable and effective method for correcting hallux valgus deformity. It not only corrects the hallux valgus angle, but also helps to restore the inter-metatarsal angle.

Abstract no.: 29175

**THE TREATMENT OF ACUTE VERSUS CHRONIC
ACROMIOCLAVICULAR JOINT DISLOCATIONS WITH A MODIFIED
WEAVER-DUNN PROCEDURE**

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Aims: Our series looks at the efficacy of a modified Weaver-Dunn procedure for the treatment of acute [<6 weeks] and chronic [>6 weeks] ACJ injuries at between 2 and 7 years post-op. **Methods:** A retrospective review of patients who underwent reconstruction of the Coracoclavicular ligament using the Coracoacromial ligament, with the reinforcement of the repair using a hook plate was performed. Questionnaires including the DASH [Disabilities of the Arm, Shoulder and Hand] score and patient satisfaction were completed. **Results:** Our series consists of 22 patients, average age 46.5 [29-63 years]. 9 patients were treated acutely compared to 13 chronic ACJ dislocations. DASH scores [0 – 100, Higher scores represent increased disability] were calculated at an average of 53 months [range 20-84] post-operatively. The acute group averaged 5.5 +/- 9.6 [range 0 – 28.3] compared to 5.3 +/- 6.8 [range 0 -20.8] for the chronic fixation. Patient satisfaction scored 9.2 out of 10 on the VAS for the acute compared to 8.8 for chronic. 20 patients would have the procedure again. Wound oozing, a broken screw and chronic post-operative pain that required suprascapular nerve ablation were documented complications. **Conclusion:** The average age of patients in our series is significantly older than would be expected. The combined hook plate and modified Weaver-Dunn procedure works well for both acute and chronic ACJ dislocations with no significant statistical difference between them when comparing DASH scores or patient satisfaction in the midterm.

Abstract no.: 29176

“TORNADO” PLATE FOR MIDSHAFT FRACTURE OF CLAVICLE

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Recently, displaced midshaft fractures of the clavicle tend to be treated operatively. Although plate fixation provides sufficient stability, fitting of the existing plates for the clavicle, even if so-called anatomical plates, is not sufficient. We have created a new type anatomical plate called “tornado plate” and applied to clinical cases. The aim of this study is to evaluate the clinical results of this plate. A strong side bending is applied on one side of eight to ten holed titanium reconstruction plates for fit the distal shape of the clavicle. An anterior torsion modification is added on the other side. The plate faces on the upper surface of the clavicle at the distal side and front side at proximal. Twenty five clavicle fractures underwent operation using the “tornado plate” in our hospital from 2008 were included in this study. The fractures united uneventfully and fitting of the plate was excellent in all cases. Our anatomical “tornado plate” provides excellent stability and adaptability to the clavicle despite of seldom necessary of intraoperative modification of the plate. These results encouraged us to develop a pre-contoured anatomical plate whose strength is proved by mechanical tests.

Abstract no.: 29178

ANTIBIOTICS-IMPREGNATED POLYMETHYLMETHACRYLATE IN THE TREATMENT OF INFECTED NONUNIONS AND SEGMENTAL BONE DEFECTS

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INTRODUCTION: Treatment of bone infections is variable and includes: removal of osteosynthesis, toilette and surgical debridement, administration of systemic antibiotics, and in some cases antibiotic loaded cement. We present a retrospective review of patients with an infected nonunions and segmental bone defects treated with antibiotic loaded cement spacers. **MATERIALS AND METHODS:** We performed a retrospectively review of eighteen cases of long bone infected nonunions and four cases of segmental bone defects. Antibiotic loaded cement was used in all cases. The surgical technique consisted on folding the osteosynthesis with antibiotic loaded cement in nonunions and in bone defects segment; the molding of cement was done according to the defect size. **RESULTS:** Minimum follow up was one year. In four cases the spacer was not removed, and served as the definitive treatment. In the remaining 18 cases, the material was extracted, and a second surgery was performed for final osteosynthesis and bone reconstruction. In all cases autogenic bone graft with antibiotic was used. 20 patients (91%) healed uneventful without recurrence of infection. One patient underwent a bellow knee amputation, and one patient is under treatment, both for recurrence of infection. **CONCLUSION:** Antibiotic loaded cement allows local control of infection fills dead space and forms a pseudo synovial membrane, which favours osteointegration of bone. In some infected nonunions it serves as definitive treatment.

Abstract no.: 29179

THE EPIDEMIOLOGY OF CONGENITAL TALIPES EQUINOVARUS IN SICILY

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Purpose: Aim of the study is to report on the epidemiology of congenital talipes equinovarus in Sicilian population. **Methods:** Sicily, with a population of 5.6 million and about 50,000 newborns each year, established the Sicilian Register of Congenital Malformations (ISMAC) in 1991, one of the largest European registries for birth. We review the database for notification of idiopathic CTEV. We examined: side affected, sex and body weight, presence of associated anomalies, maternal and paternal age, gestational age, family history, pregnancy maternal history, parental exposure to illicit drugs or alcohol during the index pregnancy, parental education, and ethnicity. **Results:** 605.896 live births were recorded between January 1991 and December 2009, 827 cases (560 male, sex ratio 1.25) were registered. The birth prevalence was 1,36/1000 births. The anomaly was bilateral in 529 (64%), and 298 (36%) unilateral and 455 (55%) in the right side. The average birth weight was 3092 ± 562 g. Gestational age was 39 ± 2 weeks, maternal age 27 ± 6 years, and paternal age 31 ± 6 years. In 351 cases (42.5%) the child was the first-born. 8.8% of children had other associated abnormalities. No evidence of a statistically significant association was found for reproductive history, maternal and paternal periconceptional drug exposure, parental education, ethnicity. **Conclusions:** We reported the incidence of CTEV in Sicily. Studies on the epidemiology of CTEV are important. They may lead us to ethiology of the anomaly and this would provide a basis for further improvements in the treatment.

Abstract no.: 29180

VASCULAR INJURY OF INTERNAL ILIAC ARTERY AFTER LUMBAR DISC SURGERY: CASE PRESENTATION

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A male patient aged 37 with a history of low back pain for the last 9 months with no response to the medical treatment based on anti-inflammatory drugs (NSAID) and physiotherapy (FKT). Magnetic resonance imaging (MRI) showed degenerative disc disease (DDD) in the L3-L4, L4-L5 and L5-S1 levels. He referred right sciatica pain with an intensity of 9 according to the visual analog scale (VAS), positive Lasegue at 30 ° with irradiation on the right L5 root territory without neurological deficit. After a month of progressive worsening of the symptoms a surgery was scheduled (partial L5-S1 discectomy). The procedure lasted 45 minutes with a good recovery from anesthesia. The blood pressure (BP) began to descend at the recovery room without being able to reestablish it, and where the lab displayed signs of bleeding that did not correlate to the surgical intervention. On physical examination the patient had both pedal and posterior tibial pulses present, but he referred exquisite pain on palpation over the left lower quadrant of the abdomen with distension. He was admitted to the hemodynamics service where an arteriography was performed. The aortic bifurcation was observed at L3-L4 disc and loss of contrast at the level of the left internal iliac artery was identified. The artery was sclerosed during the procedure. The patient recovered favorably, being treated for anemia for about a month. It has been 8 months now after surgery with excellent outcome without referring neurological symptoms.

Abstract no.: 29181

POSITIVE SEDIMENTATION SIGN IN PATIENTS WITH LUMBAR SPINAL STENOSIS

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Introduction: Lumbar Spinal Stenosis (LSS) is one of the most common causes of Spine surgery, and unfortunately, the diagnosis is not always easy because the imaging findings are not always related to the clinic, which made additional signals so important for their correct diagnosis. Barz Thomas showed that in patients without LSS, there was sedimentation of the nerve roots to the dorsal dural sac on MRI images by gravity. In patients with LSS this sedimentation is seldom seen, being defined as a positive "sedimentation sign". **Material:** Review of clinical and imaging of patients with LSS. This study includes 124 patients. **Methods:** We identified the main complaints of patients. **Imagiologic** we evaluated the diameter of the canal and the presence of sedimentation of D12-L1 to L5-S1. **Results:** The patients showed claudication with or without LBP and leg pain, a cross-sectional area <80 mm. A positive sign of sedimentation has been identified in patients with LSS in L2 to L4. **Discussion:** The sedimentation sign has been identified at the level above and below the stenosis. There was no difference in the identification signal from L1 to L5, unlike D12-L1 and L5-S1 where the distribution of nerve roots is not similar to the other lumbar levels. **Conclusion:** The Sedimentation sign is positive in Patients with LSS between levels L2 to L5.

Abstract no.: 29183

LONG LOCKED WAVE PLATES AND AUTOLOGOUS BONE GRAFT FOR THE TREATMENT OF LOWER LIMBS NONUNION

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Introduction: Diaphyseal fractures of the lower limb are common among younger patients. Closed reduction and fixation with locked intramedullary nailing has become the gold standard treatment. Femoral fractures may fail to unite because of the severity of the injury, damage of surrounding soft tissues, inadequate initial fixation, and demographic characteristics of the patient, including nicotine use, advanced age, and medical comorbidities. The literature provides little information on the treatment of nonunion with locked plates and wave plates fixation techniques. We report our experience in treating such injuries.

Materials and Methods: We performed a retrospectively review of 19 patients between 2006 and 2010. 10 male and 9 female. The average age was 41.9 years old. 3 were hypertrophic, 6 oligotrophic and 10 atrophic. All aseptic at the time of definitive treatment.

Results: The time between initial treatment and final plating was 2 years. In all cases, long locked 4.5 mm. wave plates were used. In 16 patients (84%), autologous cortical bone graft was used in the site of nonunion at the time of plating. Bone healing was achieved, on average, at 6 months in the tibia and 7 months in the femur.

Conclusion: Despite advances in surgical technique, fracture fixation alternatives, and adjuncts to healing, long bone diaphysis nonunion continues to be a significant clinical problem. Used appropriately, nail dynamization, exchange nailing, and plate osteosynthesis can help minimize pain and disability by promoting osseous union. Long, locked wave plate osteosynthesis is a good treatment option for these complex situations.

Abstract no.: 29185

**TREATMENT AND ASSOCIATED INJURIES IN FEMUR AND TIBIA
IPSILATERAL FRACTURES: "FLOATING KNEE"**

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Introduction: Floating Knee is used for tibia and femur ipsilateral fractures. These injuries are associated with many complications which threaten the patient's life. We report our experience in the treatment of these injuries over a period of six years reviewing and comparing results with the literature. **Materials and Methods:** This is a retrospective, descriptive and observational study. We had 16 patients, 11 were male (68.7%) and 5 female (31.3%) from January 2003 to July 2009. Average age was 38.5 years (20 - 70 years). Fraser's classification was used for floating knee. We evaluated: range of motion, surgical hardware, associated injuries, healing time, complications and additional surgeries. **Results:** Twelve of 16 patients (75%) had associated injuries. Twelve patients (75%) received Early total care and 4 (25%) had damage control. The averaged healing time of both bones was 6 months. Eight patients (50%) required additional surgeries. **Conclusion:** Patients with floating knee, often results from polytrauma. The different published series report an average of 50% to 62% of associated injuries. The damage control with external fixation is an excellent option. An early and final stabilization, allowing early mobilization, reducing systemic problems in polytrauma and the complications associated with prolonged bed rest, is our treatment of choice.

Abstract no.: 29186

AWARENESS ABOUT COMPARTMENT SYNDROME AMONG TRAUMA NURSES: NEED FOR INTENSE TRAINING

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Aim: To assess the level of awareness of trauma ward nurses on the diagnosis and management of impending compartment syndrome. **Materials and Methods:** A questionnaire was prepared and distributed to the registered nurses who manage trauma patients. Following the first study, a flow chart showing the management of impending compartment syndrome was put up in all the wards. A re-audit was performed again after 12 months to assess their awareness. In the first study, 55 nurses filled the questionnaire and in the second one, 51 completed the questionnaire. **Results:** In the first study, 60% of them knew what compartment syndrome was, but in the re-audit, only 58.8% understood the definition. Tibial fracture was identified as the most common cause by 61.8% in the first study and 86.3% in the second study. In the first study, 54.5% felt that pain out of proportion to injury is an important symptom; in the re-audit 68.6% mentioned it. More than two third recognized pain on passive stretch as an important sign and in the second study, less than half of them recognized this. In both studies, more than half of them opted for calling the SHO as their immediate response on diagnosing the condition. Around 85% of them answered limb loss as the potential dreaded complication in both audits. **Conclusion:** The study clearly shows that the level of awareness about compartment syndrome among trauma nurses is suboptimal. **Action Plan:** Regular education sessions for the nurses started

Abstract no.: 29190

INTERNAL FIXATION OF PROXIMAL HUMERAL FRACTURES USING THE PHILOS PLATE

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Aim: The aim of this study was to assess outcomes and efficacy of the Proximal Humeral Internal Locking System (PHILOS) as a treatment of proximal humerus fractures. Method: We retrospectively reviewed all patients who sustained proximal humeral fractures treated with PHILOS plating in a 7 year period from December 2003 to November 2010. There were 51 procedures carried out. Outcomes were assessed using the Oxford Shoulder Score and a 10cm Visual Analogue Scale (VAS). Results: There were 26 (51%) female and 25 (49%) male patients with an average age of 60.6 (23.0 – 88.9) years. In 26 (51%) cases the injury affected the dominant side. The indications for surgery were: acute fracture (40, 78.43%), nonunion (8, 15.69%), acute fracture dislocation (1, 1.96%), malunion (1, 1.96%) and revision of failed IM fixation (1, 1.96%). Average inpatient stay was 7.2 days (0-67) and average number of follow up visits before discharge was 4.6 (1-15) over an average duration of 9.8 months (1.8 – 44.2). We found 48 (94.1%) fractures united without consequence with 1 (1.96%) case of nonunion, 1 (1.96%) case of metalwork cut out and 1 (1.96%) mortality on the first post operative day. The average Oxford Shoulder Score was 28.4 (6 – 48) and mean VAS was 6.9 (0 – 10). Conclusion: The PHILOS plate is an effective treatment of proximal humeral fractures and has high patient satisfaction.

Abstract no.: 29191

UNCEMENTED ACETABULAR RECONSTRUCTION IN POST TRAUMATIC ARTHRITIS

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INTRODUCTION: Acetabular fractures can cause degenerative arthritis of the hip. The purpose of this study was to describe and analyze retrospectively our patients with uncemented acetabular reconstruction in post traumatic arthritis and compare with those of the same procedures in patients with nontraumatic arthritis, with younger age and with similar follow-up. **MATERIALS AND METHODS:** We studied 17 patients treated surgically with uncemented acetabular reconstruction in post traumatic arthritis secondary to acetabular fracture. The average age at the time of arthroplasty was 49.2 years. The age at the time of fracture was 46.2 years. The average time between the acetabular fracture and THR was 35.8 months. The average follow-up was 2.6 years. **RESULTS:** There wasn't radiographs loosening of prosthetic components. One case required a two stage revision for infection. Harris Score averaged 89.3. The control group with nontraumatic arthritis had 3.1 years follow-up, Harris Score was 94.1. In this group we didn't find infection or radiographic loosening. There was no significant difference with Harris Score when comparing both groups. **CONCLUSION:** Uncemented acetabular reconstruction in post traumatic arthritis secondary to acetabular fracture is a procedure much more difficult than routine arthroplasty in patient with nontraumatic arthritis. In the short term there are no clinical or radiographic differences in THR with uncemented acetabular cups in post-traumatic arthritis patients compared with patients with nontraumatic arthritis.

Abstract no.: 29192

**INTRAMEDULLARY FIXATION OF DIAPHYSEAL CLAVICLE FRACTURES
USING THE ROCKWOOD CLAVICLE PIN: A REVIEW OF 68 CASES**

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Aim: To assess the outcomes of diaphyseal clavicle fractures treated with intramedullary fixation using the Rockwood pin. Methods: We conducted a retrospective analysis of diaphyseal clavicle fractures treated with intramedullary fixation using the Rockwood pin between 2004 and 2010. Sixty-eight procedures were carried out on 67 patients. Functional outcome was assessed using the Disability of the Arm, Shoulder and Hand questionnaire and an overall patient satisfaction questionnaire. Results: There were 52 (77.6%) male and 15 (22.4%) female patients with an average age of 35.8 years. Fractures were classified according to the Edinburgh system with the commonest configuration being the Type 2B1 (47, 69.1%). Indications for fixation were; acute management of displaced fractures (56, 82.4%), delayed union (2, 2.9%), nonunion (8, 11.8%) and malunion (2, 2.9%). Average time to pin removal was 3.7 months and the average follow-up prior to discharge was 6.9 months. Sixty-six (97.1%) fractures united. Two (2.9%) cases of non-union were treated with repeat fixation using a contoured plate and bone graft. The most common problem encountered postoperatively was discomfort due to pin prominence posteriorly (12, 17.6%) which resolved following removal of the metalwork. The average DASH score was 6.04 (0 – 60) and 96.4% of patients rated their satisfaction with the procedure as good to excellent. Conclusion: Advantages of intramedullary fixation include; cosmetically favourable scar, preservation of periosteal tissue, avoidance of stress risers associated with screw removal and reduced incidence of infraclavicular numbness.

Abstract no.: 29194

FRACTURE OF PHALANGES - REVIEW

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Objective: A theoretical review using the major medical search engines diagnosis, treatment and complications. **Material y methods:** We used the search engine "Pubmed", "Science Direct" and "Ovid" with the information: "hand phalange fractures" or "hand finger fractures". **Results:** In the search engine "pubmed" found 284 items with the reference to fracture of phalanges of the hand, and 1782 when we referred to fractures of fingers, excluding all items with more than 3 years and we get a total of 150 articles. In "ovid", with the same references and limits found 3 items. In the "science direct" found 2636 articles. **Abstracts** were selected with reference directly to fractures of the phalanges of the hands and conducted the review. **Discussion/Conclusion:** Fractures of the phalanges are common and often undervalued which can lead to poor functional results. Adequate knowledge of the patterns of fracture is extremely important to properly treat these fractures. The systematic use of ratings may help in assessing the prognosis of the fracture and its surgical indication. A correct incidence of X-ray (a true lateral) is essential for the evaluation of all lesions of the fingers, just as an adequate inspection of the joints.

Abstract no.: 29196

OUTCOMES OF THE DELTA REVERSE GEOMETRY SHOULDER REPLACEMENT: SHORT TO MIDTERM RESULTS FOR 55 CASES

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Purpose: The Delta reverse shoulder prosthesis is indicated for use in severe rotator cuff arthropathy or for previously failed joint replacement with a grossly deficient rotator cuff. The purpose of this study was to evaluate the outcomes and complications associated with the use of this implant. **Methods:** We conducted a retrospective analysis of all Delta shoulder replacements performed between 2005 and 2010. During this period 55 procedures were carried out on 51 patients. Functional outcome was assessed using the Oxford shoulder score and all patients were asked to complete a procedure related satisfaction questionnaire. **Results:** There were 32 (62.7%) female and 19 (37.3%) male patients with an average age of 74.1 years. The indications for surgery were; Cuff Tear Arthropathy 44 (80.0%), as a revision prosthesis 6 (10.9%), and for the treatment of complex proximal humeral fractures 5 (9.1%). Patients were followed up for an average of 17.9 months and attended an average of 5.6 outpatient clinics prior to discharge. Deep infection was a complication of 4 (7.3%) cases. Other problems encountered were; stiffness (2, 3.6%), persistent shoulder pain (2, 3.6%) and heterotrophic ossification (1, 1.8%). The average Oxford Shoulder Score was 34.5 and the patient perceived satisfaction questionnaire revealed good to excellent results in 77.4% of patients. **Conclusion:** Our experience has demonstrated favourable short to midterm results. Previous concerns regarding scapular notching have been addressed in the most recent version of this implant.

Abstract no.: 29197

SHORT TERM RESULTS WITH LUMBAR INTERSPINOUS WALLIS IMPLANT

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OBJECTIVES: To evaluate the clinical outcome of interspinous wallis implant in the management of symptomatic lumbar spinal pathology. **MATERIAL AND METHODS:** Between July 2008 and Sept 2010, 21 patients (12 men and 9 women) who were surgically treated with a Wallis ligament were reviewed. The primary indication for surgery was adjacent to discectomy for degenerative spine disease and instability with neurogenic or radicular pain (n=8), fusion surgery for chronic back pain (n=7) and lumbar decompression (n=6). Mean patient age at operation was 46 years (range 25 to 70 years). Clinical outcomes were evaluated by visual analog scale (VAS) for back and leg pain and the Oswestry Disability Index (ODI) at a mean follow up of 18 months (range 3 to 29 months). **RESULTS:** The clinical outcome measurements (VAS, ODI) showed significant improvement in all postoperative measurements compared to preoperative values. The mean preoperative visual analogue score (VAS spine, 8.5 and VAS limb, 8.1) and Oswestry Disability Index (ODI 71.5) significantly decreased to 1.6 for VAS spine and 0.7 for VAS limb and 11.6 for ODI. There was no mortality or morbidity. **CONCLUSIONS:** The Wallis implant does not adversely affect the outcome of surgeries for symptomatic lumbar spine pathology and may be an effective technique in the prevention of adjacent segment disease. However studies with a larger series and longer follow-up periods are needed to determine the success and safety of posterior dynamic stabilization in the surgical treatment of lumbar spinal pathology.

Abstract no.: 29201

EVALUATION OF TREATMENT OF ANTERIOR CRUCIATE LIGAMENT (ACL) BONY AVULSION FIXATION BY CANCELLOUS FIXATION SCREW

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Bony avulsion of ACL is usually due to low velocity injury. Treatment is arthroscopic suture fixation or cancellous screw fixation. The purpose of this study was to evaluate the clinical outcome of ACL bony avulsion by cancellous screw fixation with mini open approach. Material & Methods: 11 patients with ACL bony avulsion were studied from October 2005 to July 2008. All patients with Type 2 or 3 Meyer/ McKeever avulsion fracture were included in study. Type 1 fractures or comminuted & fracture more than 4 weeks were excluded. Avulsion fracture was fixed by mini open para-patellar approach using single 4.0 mm cancellous screw with washer. Post-operatively knee was immobilized in extension lock brace for 3 weeks and later mobilized. All patients were followed up for a minimum period of one year. Clinical assessment was done by Lysholm & IKDC objective scores. Results: Fracture united in ten patients whereas one patient with type 3 McKeever went into non union. Seven out of ten patients had IKDC B whereas other three had IKDC grade C. Average Lysholm score was 82.5. All patients had residual laxity of Lachman grade 1 or 2. Four out of ten later reported intermittent instability for which they underwent ACL reconstruction. Conclusion: Mini-open cancellous screw fixation in ACL bony avulsion is a good option. However, residual ligament laxity is common indicating intra substance damage to ACL along with bony avulsion and can become symptomatic later even if fracture has united, compelling ACL reconstruction.

Abstract no.: 29206

**LIMITATIONS OF THE GAP BALANCING TECHNIQUE IN CREATING
RECTANGULAR FLEXION GAP IN TOTAL KNEE ARTHROPLASTY**

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A gap balancing technique is commonly used in total knee arthroplasty (TKA) to create a rectangular extension and flexion gap. However, an acquired intra-operative rectangular flexion gap sometimes fails to remain in knee alignment post-operatively. The purpose of the present study was to evaluate and compare intra-operative and post-operative coronal alignment at knee flexion. Patients and Methods: Data were obtained from 19 consecutive TKA patients who agreed to participate in this institutional review board–approved study. All surgeries were performed using a modified gap balancing technique (extension – flexion). After soft tissue releases and all bony resections were completed, a rectangular flexion/extension gap was created. Intra-operative coronal alignment at 90° knee flexion was measured using a knee balancer following fitting with a trial femoral component. We also measured post-operative coronal alignment at knee flexion using x-ray (epicondylar view) six months after the operation. Results: Intra-operative coronal alignment was 0.8 ± 2.4 degrees externally rotated against the tibial plateau. However, post-operative coronal alignment was 1.6 ± 2.0 degrees internally rotated. Furthermore, no cases showed external rotation in post-operative knee alignment. Conclusion: Although intra-operative and post-operative coronal alignments at knee flexion were within 3 degrees of internal/external rotation, our results indicate that acquired intra-operative rectangular flexion gap changes significantly to an externally rotated flexion gap post-operatively. Surgeons need to be aware of this change in coronal alignment.

Abstract no.: 29207

SACRAL CHORDOMA IN ADULT SHOWING AN AGGRESSIVE CLINICAL COURSE: A CASE REPORT

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Purpose: To identify the clinicopathologic features of sacral chordoma in our case showing an aggressive clinical course. Case Report: A 78-year-old man was hospitalized at our hospital with the complaints of resting pain, constipation and a hard mass in the sacral area of approximately two years' duration. Physical examination revealed an 8cm-diameter and 3cm-diameter elastic hard mass in the sacral and gluteal region. X-ray studies disclosed an osteolytic lesion in the sacrum. Magnetic resonance image (MRI) disclosed a large tumor with posterior compression of the rectum. At operation, an encapsulated tumor was found, and its adhesion to the pre-sacral membrane was not prominent, but its invasion of the gluteal muscles was comparative. The patient received postoperative irradiation to the sacral region (total, 60Gy) because surgical margin was marginal. Nine months after the operation, recurrent gluteal mass was palpable and MRI disclosed multiple metastasis of the spine. Fifteen months after the operation, the patient died of respiratory dysfunction. The histologies of both original and metastatic tumor did not show the proliferation of anaplastic cells, although the area of transition between conventional and atypical chordoma was observed. Discussion & Conclusion: To our knowledge, there has been no report of aggressive sacral chordoma in adult. At first, we suspected a dedifferentiate transformation of chordoma, but the pathological examination revealed this tumor concisted of transition between conventional and atypical chordoma. This case suggests that sacral chordoma in adult showing an aggressive clinical course is exist and it should be treated as highly malignant.

Abstract no.: 29210

**ARTHROSCOPIC TREATMENT OF LATERAL EPICONDYLITIS:
COMPARISON OF THE OUTCOME OF ECRB RELEASE WITH AND
WITHOUT DECORTICATION**

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Purpose: We performed a comparative analysis of the control group and the group undergoing decortication during arthroscopic treatment of lateral epicondylitis. **Methods:** 38 patients who were arthroscopically treated for lateral epicondylitis were selected from January 2004 to June 2008. Among these 38 patients, 19 patients underwent arthroscopic extensor carpi radialis brevis (ECRB) release and 19 patients underwent ECRB release with decortication. The level of pain was evaluated by using the visual analog scale (VAS) score before and 1 day, 2 weeks, 4 weeks after the surgery and at the last follow up. Functional evaluation was performed according to the evaluation method of Mayo Elbow Performance Index as well as through grip strength assessment. **Results:** VAS score 1 day, 2 weeks and 4 weeks after surgery was significantly lower in the group that underwent simple ECRB release ($p < .05$). The average time taken to return to work was 24 days in the group that underwent simple ECRB release and 39 days in the group that underwent ECRB release with decortication. The difference between the 2 groups was statistically significant ($p < .05$). **Conclusions:** We assume that arthroscopic decortication seemed to cause more significant initial pain postoperatively, and did not lead to better outcomes compared to simple ECRB release. Accordingly, we don't need to decortication for the treatment of recalcitrant lateral epicondylitis and that the use of arthroscopic ECRB release alone could produce excellent treatment outcomes. **Level of Evidence:** Level IV

Key Words: Elbow, Lateral epicondylitis, Arthroscopic release, Decortication

Abstract no.: 29211

THE RESULT OF ARTHROSCOPIC ROTATOR CUFF REPAIR COMBINED WITH BICEPS TENDON LESIONS

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Background: During rotator cuff repair, lesions on the long head of biceps tendon are common. But, there is no clear optimal treatment for these lesions. **Methods:** From January 2007 to December 2008, 52 patients underwent rotator cuff repair and tenodesis using by interference screw. Last follow-up examinations were done in 49 of 52. Among them, patients performed arthroscopic tenodesis were 24, and patients performed subpectoral tenodesis were 25. Average follow up was 18 months (range, 14-40 months). The results were evaluated by VAS, ASES, Constant score, elbow flexion power, tenderness in the biceps groove, "Popeye" deformity, and biceps apex distance (BAD). **Results:** There were no statistically significant differences between group demographic data in such as age, sex, smoking, VAS, ASES, Constant score, and size of rotator cuff tear. All patients showed improvement between preoperative and last follow up with regard to VAS, ASES, Constant score. When comparing arthroscopic tenodesis with subpectoral tenodesis results, pain in the groove of biceps was significantly higher at 2 weeks, 1 month and 3 months after surgery in arthroscopic tenodesis($p<0.05$). Nevertheless, at the last follow-up VAS ($p=0.724$), Constant score ($p=0.152$), ASES score ($p=0.431$) and elbow flexion power ($p=0.073$) of the two groups were not significantly different. **Conclusion:** Subpectoral tenodesis lead to less anterior pain in early postoperative period than arthroscopic tenodesis. But, there was no statistically difference between the 2 techniques at the last follow-up. **Study Design:** Cohort study; **Level of evidence:** 2.

Abstract no.: 29212

TREATMENT OF PERTROCHANTERIC HIP FRACTURES: A COMPARISON OF PERI-OPERATIVE OUTCOMES WITH A SLIDING HIP SCREW (SHS), GOTFRIED PERCUTANEOUS COMPRESSION PLATE (PCCP), AND CEPHALOMEDULLARY NAIL (CMN)

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A retrospective review was done of 94 consecutive A1-A3 AO/OTA pertrochanteric hip fractures treated at a level one trauma center from November 2004 to December 2005. Eighteen patients were treated with a cephalomedullary nail (CMN), twenty with a sliding hip screw (SHS), and 56 with a percutaneous compression plate (PCCP). Groups were comparable in age, gender, and preoperative morbidities. Operative time was 47min for the PCCP, 85min for the SHS, and 123min for the CMN ($p<0.0001$). Total incision length was 6cm for the PCCP versus 10cm for the SHS and CMN ($p<0.0001$). Fluoroscopic time was 60sec for PCCP, 70sec for SHS, and 100sec for CMN ($p<0.0001$). Blood loss and need for postoperative blood transfusion were significantly less in the PCCP group ($p<0.0001$). We classified pertrochanteric fractures into stable (A1.1-3, A2.1), unstable with intact lateral wall (A2.2,A2.3) and unstable with disrupted lateral wall (A3.1-3) and found that fracture type is associated with OR time, incision length, blood loss and need of transfusion. Further analysis showed the preference of CMN in A3 type fractures is a main contributor to the difference observed in the effect of the fracture type on all of the peri-operative parameters. However, there was not a significant difference between the groups in terms of hospital stay or complications related to surgery. The PCCP offers an excellent option for the treatment of stable and unstable pertrochanteric hip fractures with an intact lateral wall.

Abstract no.: 29213

HOW FAR ABOVE THE TRUE ANATOMICAL POSITION CAN THE CUP BE PLACED DURING TOTAL HIP ARTHROPLASTY?

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BACKGROUND: The true anatomical position of the acetabulum is an ideal position of the cup as a rule when considering total hip arthroplasty (THA) for the treatment of developmental dysplasia of the hip (DDH). However, in many THAs we have chosen a position above the true anatomical position for placing the cup. We evaluated the relationship between the cup position and Trendelenburg sign to investigate where is the upper limit of the cup position from the hip abductor strength standpoint. **METHODS:** We evaluated 200 female patients who underwent unilateral THA. We used the cementless cup (Trilogy, Zimmer, USA) for all cases. We investigated the relationship between Trendelenburg sign and the height of the hip center from teardrop line, age, the femoral offset and the abductor lever arm (McGrory et al. JBJS-Br 1995) at one to two years postoperatively. **RESULTS:** Of the 200 cases, twenty (10%) showed Trendelenburg sign. High placement of the cup, the femoral offset and the abductor lever arm were not associated with the prevalence of Trendelenburg sign significantly. However, comparison of the age over or under 65 years revealed a significant difference in the prevalence of Trendelenburg sign ($P < 0.01$). **CONCLUSION:** Our results indicated that the hip abductor strength was affected more by age rather than the height of the cup position, and we could place the cup without reduction of the hip abductor strength if the height of the hip center is up to about 30mm from teardrop line.

Abstract no.: 29216

FIXATION OF PROXIMAL HUMERAL FRACTURES IN OSTEOPOROTIC BONES WITH LOCKING PROXIMAL HUMERAL PLATE (LPHP)

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Background: Different operative techniques used for treating displaced proximal humeral fractures could result in malunion, non-union, osteonecrosis of humeral head, loosening of screw and loss of reduction particularly in comminuted and osteoporotic fractures. Locking compression plate (LPHP) has been proposed for open reduction and internal fixation of these fractures and is associated with less complication rate. **Materials and methods:** We prospectively assessed the functional outcome and the complications after an average follow-up of 48 months in 50 patients of proximal humeral fractures with osteoporosis. Mean age was 62 years. Using AO classification, 48% were type A and 52% type B. **Results:** Mean constant score was 80 points. According to constant score, 28% had excellent outcome, 64% had good functional outcome, and 8% had moderate outcome. When the results were related to grades of osteoporosis, grade IV osteoporotic fractures had highest average Constant–Murley score (83 points, range 78–88 points), followed by grade III osteoporotic fractures (80 points, range 71–92 points), followed by grade II osteoporotic fractures (78 points, range 66–88 points). Varus malalignment and subacromial impingement were observed in 8% patients. Loosening of implant and loss of reduction were observed in 4% patients. Superficial infection was observed in 4% patients. **Conclusions:** LPHP is an advantageous implant in proximal humeral fractures due to angular stability, particularly in comminuted fractures and in osteoporotic bones in elderly patients, thus allowing early mobilization.

Abstract no.: 29218

INCIDENCE OF FRACTURE OF THE EXTREMITY IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Objective: To investigate the incidence of fractures of extremity in rheumatoid arthritis (RA) patients. **Methods:** The study population consisted of 345 outpatients with RA fulfilled the ACR 1987 criteria. We studied those patients for 3 years and assessed the incidence of fractures. The age, sex, disease duration, Steinbrocker stage or class, anti-rheumatic drug use, and glucocorticoid use were evaluated. **Results:** In a total of 345 patients in this study population, there were 287 females and 58 males. The mean age was 60 years old, from 24 to 83 years old. During the follow-up period, 30 fractures in 28 patients were occurred. Mean age of patients with fractures was 68 years old, ranging from 40 to 81 years old. Fractures diagnosed were occurred in various sites. There were 9 in hip, 7 in knee, 4 in foot, 3 in shoulder and ankle, 2 in elbow, and 1 in hand and wrist. Out of 30 fractures, 12 fractures were operated. Especially, all hip fractures required the operative treatment. Most common cause of the fracture was falling during walking. Twenty three cases were injured by falling during walking and standing, 3 cases were injured while at work and 2 cases in the traffic accident. The incidence of fracture was 2.9 fractures per 100 patient-years. **Conclusion:** Fractures in lower extremities often caused impairment of gait and daily life. It was suggested that intervention to prevent the falling in daily living was important to avert fractures in patients with RA.

Abstract no.: 29220

**SHOULD KUNTSCHER'S NAIL BE DISCARDED IN TODAY'S
ORTHOPEDICS PRACTICE? YES OR NO**

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Introduction: Kuntscher's nail remained the main implant for fixation of femoral diaphyseal fractures since 1940's. After the inventory of interlocking nails, importance of Kuntscher's nail has reduced in last two decades. However, in third world countries this being a low cost implant; many patients can be benefited. **Methods:** We have been using this implant for the fixation of diaphyseal fractures of femur and arthrodesis of the knee after resection of the tumors for last four decades. We have also used its innovative modification for the sub-trochanteric fractures and with uni-cortical interlocked methods. This has been utilized in more than one thousand patients so far. **Results:** We achieved very good results as far as fracture union is concerned and also found it to be good implant for the fusion of joints. With uni-cortical inter-lock method for wide marrow fixation and as filler for the gap in tumor resection it has been excellent implant with minimum complications. **Discussion:** Kuntscher's nail is cost-effective, technically easy with added advantages of three point fixation and elastic recoil after insertion; provides good stability and fixation. In the countries like India there dwell so many poor patients who can not afford the cost of interlocking nails. In them Kuntscher's nail has been the boon for the treatment. This nail of great utility should not to be discarded till it is providing good service to the mankind. This implant costing approximately five dollars should exist for the treatment of poor and downtrodden.

Abstract no.: 29221

ROLE OF H-GRAFTING IN SPONDYLOLISTHESIS

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Introduction: Various methods of lumbo-sacral fusions for the treatment of degenerative spinal diseases are used clinically. Results vary greatly depending on indication, type of fusion, implants, and method of evaluation. **Material and methods:** We studied fusion of the lumbosacral spine carried out in 25 patients with spondylolisthesis. Operative technique consisted of a posterolateral fusion together with an autologous corticocancellous H-graft wedged under distraction between the spinous processes of vertebrae to be fused. The duration of postoperative bed rest ranged from four to six weeks; a lumbosacral corset was used at least for six weeks postoperatively. The average stay in hospital was 22 days. **Results:** Assessed from functional radiographs 95% of the fusions were successful. Nearly half the patients with radiologically successful fusions had a good subjective improvement and about one-fourth had returned to their previous or corresponding occupations. The rate of pseudo-arthrosis was 3.6%. No major complications such as nerve root damage, postoperative neurological deficits, or spinal stenosis were found. Age over 40 years, long-standing preoperative disability and previous back operations proved prognostic factors for poor results. The operative technique appeared simple and suitable providing good fusion rate without the use of metallic implants. **Conclusion:** We conclude that inter-spinous H-grafting for the treatment of spondylolisthesis is a safe, simple and cost-effective method. This achieved posterior lumbar interbody fusion with preservation of the dorsal structures, particularly of the facet joints.

Abstract no.: 29226

ANTIBACTERIAL PROPERTIES OF BONE CEMENT IMPREGNATED WITH NACL

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Although total joint replacement has become common place in recent years, bacterial infection remains a significant complication following this procedure. One approach to reduce the incidence of joint replacement infection is to add antimicrobial agents to the bone cement used to fix the implant. In this in vitro study, we investigated the use of NaCl (sodium chloride) as bactericidal agents in poly (methyl methacrylate) (PMMA) bone cement with and without gentamicin. The antibacterial activity was tested against *Staphylococcus aureus* (*S. aureus*) and *Staphylococcus epidermidis* (*S. epidermidis*). A 103-fold reduction in the number of viable bacterial cells upon contact with the surface was achievable using NaCl at a NaCl/bone cement weight ratio of 5%. The inhibition of *S. aureus* and *S. epidermidis* growth on the surface of the NaCl-loaded bone cements was clearly shown using the LIVE/DEAD BacLight bacterial viability kits and fluorescence microscopy. The NaCl also provided a significant additional bactericidal effect to gentamicin-loaded bone cement. The antibacterial effectiveness remained high even after the modified bone cements had been immersed for 3 weeks in an aqueous medium. NaCl has been found to create microchannels in the bone cement promoting more diffusion of gentamicin. Also the hyperosmotic environment becomes unfavourable for bacterial growth. Mechanical tests indicated that the addition of the NaCl in small concentration allowed the retention of a significant degree of the bone cement's strength. These results indicate a new promising strategy for combating joint implant infection.

Abstract no.: 29227

ASEPTIC FAILURE OF THA MANAGEMENT WITH MODULAR REVISION STEM

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Aseptic loosening is the major cause of failure of primary hip arthroplasty. Aim of the study is early follow up results and cause of intraoperative complication and their management. Between November 2006 and July 2010 were arrange 34 femoral revision procedures with modular cementless stem; all of them with aseptic failure. Man/woman 15/19. Average age 65 years (39 - 84). Patients were followed up for 3 to 54 months. In 26 cases was done endofemoral approach. Failed implants were cementless/cemented 20/14. Bone defect was evaluated according Paprosky. There were 23 patients – IIIA gr. and 11 patients – IIIB gr. There were some intraoperative complications – fracture of bone lid in transfemoral approach – 4 cases. In follow up period there were subside of the stem – 2 cases. Two patients died, cause unrelated with operative procedure. Follow up results evaluated according Harris Hip Score average 81.14. Modular porous coated stem is useful for distal and proximal fixation with possibility for proximal reconstruction. The principle of the use of extensively porous-coated stems is to bypass the bone deficiency and rely on distal bone for fixation. High rate complications of impact bone cement technique, megaprosthesis and other apply wide use of the cementless modular stem. Possibilities for wide clinical appliances of the modular revision stem and good early clinical results give us hope to solve part of problems connected with aseptic failure of the hip.

Abstract no.: 29228

PROXIMAL FEMORAL REPLACEMENT FOR A TREATMENT OF METASTATIC BONE TUMORS-CLINICAL OUTCOME AND AVAILABILITY OF THE SURGICAL METHOD IN WHICH THE GREATER TROCHANter IS PRESERVED AS THE CONNECTING SITE OF THE GLUTEUS MEDIUS AND THE VASTUS LATERALIS TENDON-

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Purpose: Proximal femoral replacement by a megaprosthesis is one of the optimal options for patients with a metastatic bone tumor of the proximal part of the femur because of its stability and durability. But the procedure is relatively complicated and invasive. This is especially true of reconstruction of femoral attachment of the gluteus medius tendon. We tried simpler surgical method in which the greater trochanter is preserved as the connecting site of the gluteus medius and the vastus lateralis tendon when the greater trochanter is not affected by a tumor. In this method, the greater trochanter is cut off from the body of the femur as the continuity between these tendons is maintained and fixation of the gluteus medius tendon to the replaced prosthesis is not necessary. Here we report the clinical outcome and availability of this method.

Patients and Methods: From January 2006 to December 2009, seven patients underwent proximal femoral replacement and the surgical method described above was available to five. Of these five, three (two males and one female with a mean age of 57 (54-63) years old) were eligible for functional evaluation according to the International Society of Limb Salvage (ISOLS) scoring system.

Results: All three patients had slight or no pain at the surgical site, and achieved ambulatory ability with a slight limp with or without a cane. The mean ISOLS score was 74.4 (66.7-86.7) %.

Conclusion: The simpler surgical method for proximal femoral replacement was available in most of cases and useful.

Abstract no.: 29230

**LOW COST INDIGENOUS NEGATIVE PRESSURE WOUND THERAPY
FOR THE MANAGEMENT OF TRAUMATIC SOFT TISSUE INJURY IN
DEVELOPING COUNTRY**

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The use of negative pressure wound therapy (NPWT) has effectively expedited healing in the traumatic soft tissue injuries. We describe an indigenous way of using NPWT for acute-care treatment of traumatic soft tissue wounds. The technique uses a negative pressure device using wall mounted suction apparatus with collection cannister and medical grade reticulated sterile foam dressing, with a noncollapsible romovac tube. Airtight seal is created by using an adhesive drape applied over the sponge. The negative pressure can be adjusted between 50 to 150 mm Hg. From January 2009 through June 2010 at our centre, 53 patients with high-energy soft tissue injuries were treated using this device. The study consisted of 38 males and 15 females with an average age of 34.3 years (range 16–48). On an average 3.9 sponge changes (range 2–6) were done before definitive coverage was obtained. The device was used for an average of 12.3 days (range 6–18). Twenty one wounds (39.62%) were managed either by delayed primary closure or by secondary intention, twenty six wounds (49.05 %) were managed requiring only a split-thickness skin graft and the use of a free tissue transfer was required in only six (11.32%) wounds. The Cost of our low cost negative pressure wound therapy for 10 days is around \$20 including the cost of foam, suction drain and adhesive drape. We conclude that this method of treatment is both cost effective and provides the benefit of negative pressure wound therapy.

Abstract no.: 29231

INCORPORATION OF PERIPROSTHETIC ACETABULUM BONE DEFECTS WITH ALLOTTRANSPLANTS AFTER HIP REVISION ARTHROPLASTY

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INTRODUCTION: Acetabulum bone deficiency seriously compromise outcome of the revision arthroplasty. **PURPOSE OF STUDY:** Radiological analyse of remodulation of allogeneic bone in filling of acetabulum bone defects after hip revision arthroplasty. **MATERIALS:** 2004 – 2008 years performed THRR operations of 50 pts (23 included in study, 22 – out of investigation, 5 – died) with different acetabulum defects. Time after primary THR is 2 – 20 years (average 10.12 years.) Reasons of failure: Aseptic loosening 21 pts; 84 % Osteolysis 1 pt; 4 % Infection 3 pts; 12 % According to AAOS classification: Type I 6 pts, 24 % Type II 3 pts, 12% Type III 11 pts, 44 % Type IV 5 pts, 20 % **METHODS:** 1. Preoperative radiological analyse of X ray according to AAOS classification. 2. Early postsoperative X ray analyse and 1 – 6 years after revision operation (plan pelvic X ray and hip in ML projection) for analysing of allogeneic bone incorporation according to Charnley and DeLee zonation. 3. Data analysed by Microsoft Excel and SPSS programs. **RESULTS:** Allogeneic bone incorporation by time after operation: 3 - 6 years after operation: full incorporation 35,5 % in 5 pts, partial - 64% 9 pts. 1 - 2 years after operation: full incorporation 25 % in 2 pts, partial - 50% 4 pts, minimal incorporation 25 % 2 pts. **CONCLUSIONS:** 1. Complete incorporation of allogeneic bone to take place in cases 3 - 6 years after revision operation. 2. Massive acetabular bone defects, III – IV types, need to combine with structural graft and bone chips.

Abstract no.: 29232

TUBERCULAR OSTEOMYELITIS OF THE CLAVICLE: A CLINICORADIOLOGICAL STUDY

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We report the clinicoradiological features of tuberculosis in the clavicle in 4 patients. The patients' ages ranged from 9 months to 29 years. All patients were managed with antitubercular drug therapy for one year and one underwent surgical debridement and curettage as well. Clinicians should be aware of the varied presentation (pain, non-healing ulcer, abscess, multifocal osteoarticular tuberculosis) of this condition. With the worldwide resurgence of tuberculosis, clinicians should maintain a high index of suspicion. The diagnosis of osteoarticular tuberculosis is usually made on clinico-radiological features.

Abstract no.: 29233

**OUTCOME OF TREATMENT OF THE SUBTROCHANTERIC FRACTURES
OF THE FEMUR BY RECONSTRUCTION NAIL**

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Subtrochanteric fractures of femur are difficult fractures to treat and have a high incidence of unsatisfactory results after operative treatment. Various treatment modalities like 95 degrees plate, 135 degrees hip screw-plate, gamma nails and trochanteric femoral nails with interlocking options frequently result in non-union, mal-union, metal work failure and high morbidity risk. This study aims to evaluate the use of reconstruction nail for the management of these fractures. 30 patients admitted in Dayanand Medical College, Ludhiana (India) upto June 2008 having subtrochanteric fracture femur and treated with reconstruction nail were included in this study. 26(87%) fractures united within 26 weeks with mean time of union being 24 weeks. 4(13%) patients developed delayed union out of which 3(10%) fractures united with bone grafting alone. 1(3%) patient had metal work failure for which nail was removed and union was achieved with exchange nailing and bone grafting. In 1(3%) patient nail was removed after fracture union. Shortening of 1 – 1.5 cm was seen in 2(7%) patients. No patient developed infection or mal-union. Majority of patients 15(50%) started partial weight bearing walking in 2 weeks time & 12(40%) started full weight bearing walking in 4 months time as per the status of fracture union. In conclusion, the use of reconstruction nailing for subtrochanteric femoral fractures if done accurately gives excellent outcome leading to early mobilization and less incidence of non-union, mal-union, metal work failure, infection and post-operative morbidity.

Abstract no.: 29234

ANEURYSMAL BONE CYST OF CUBOID IN ADULT: “A RARE CASE REPORT”

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Aneurysmal bone cyst is a benign lesion of bone of unknown etiology, commonly affecting skeletally immature population. Involvement of the small bones of foot by aneurysmal bone cyst has been reported very uncommonly in the literature, with only two cases reported so far of involvement of cuboid. We present the case of a 30 year old female presenting with expansile lesion of cuboid, provisionally diagnosed as a case of giant cell tumor based upon the age and presence of giant cells in the FNAC. Diagnosis of aneurysmal bone cyst was confirmed by biopsy and patient managed with excision and calcaneometatarsal fusion with painless functional foot at 3yrs follow-up.

Abstract no.: 29235

**HEMANGIOMA OF LEG (EXTRA OSSEOUS) PRESENTING WITH
LOCALIZED PERIOSTEAL REACTION IN TIBIA AND FIBULA**

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Hemangioma of the bone including periosteal one are relatively uncommon. When it occurs, it usually involves the long bones of lower extremity. We present the case of a 22 yr old female presenting with progressively increasing painful swelling in the leg for last 7 years. Plain X-ray of the patient revealed periosteal reaction involving whole of the lower 2/3rd of fibula and medial side of lower 1/3rd tibia along with erosions. MRI and MR angiography confirmed the presence of hemangiomatous involvement of the muscles of anterolateral compartment of leg without involvement of periosteum. There are only 3 cases in the literature of intramuscular hemangioma presenting with periosteal reaction. Patient was successfully managed with sclerotherapy and pressure garments without any recurrence at 3 yrs follow-up. Since these lesions mimic periosteal/ parosteal tumors, they are likely to be misdiagnosed and MRI evaluation may give most diagnostic information.

Abstract no.: 29237

**CUSTOMISED FULL CONTACT HIP PROSTHESIS DESIGN VALIDATION
IN GOAT MODEL**

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Varieties of Hip replacement prostheses that are currently available, are of standardized type i.e. some specified ball diameters and stem length and cross-sectional geometry of the femoral component. Causes of Failure of these general prosthesis are many such as mismatch of the geometry of prosthesis with medullary canal, Stress shielding & osteolysis. Mismatch in geometry can be eliminated in custom made prosthesis, since they are designed following the medullary cavity of a particular patient: Patient Specific Design and using a full contact design. In this study to design a Total Contact Prosthesis, Computed Tomographic (CT) scan data were collected in a specific format known as DICOM (Digital Imaging & Communications in Medicine) with close sections. Subsequent image processing was carried out in the software MIMICS® 10.05 (Materialise's Interactive Medical Image Control System) in .dicom format. Finite element design and stress-strain analysis was performed using software ANSYS®. Certified Medical grade Titanium alloy from MIDHANI and Fresh Goat Bone were used for this protocol. The expected theoretical advantage of this Total Contact Prosthesis is that the implant will not fail on the subjected loading conditions as the prosthesis conforms to the femur geometry. Though the loading experiment is pending, it is expected that development of such prosthesis should result in improved functional scores as well as enhanced long term survival of these implants which would be of particular benefit to young patients in need of arthroplasty.

Abstract no.: 29240

APAREUNIA: AN UNCOMMON PRESENTATION OF A COMMON DISEASE, OSTEOMALACIA

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Osteomalacia, though uncommon in developed countries is a common entity in India due to various reasons such as dietary deficiency of vitamin D and prevalent social & cultural practices such as purdah. We report a case of old healed osteomalacia in a young female which lead to deformed pelvis and subsequent apareunia. 24 y/o married woman presented to Orthopaedics OPD with complaints of inability to have sexual intercourse with her husband since marriage. Clinical examination revealed markedly narrowed vaginal orifice and bony protrusions of the deformed pelvic outlet palpable on each side. Radiographic examination of pelvis revealed bilateral deformities of inferior Ischiopubic rami obstructing the vaginal orifice as confirmed on CT imaging of the pelvis. She was managed with surgical excision of deformed inferior pubic rami resulting in restoration of vaginal orifice as confirmed again on a CT scan. The female was able to conceive in next 6 months.

Abstract no.: 29241

REASONS OF FAILURE AND TREATMENT RULES IN KNEE PROSTHETIC REVISION SURGERY

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PURPOSE OF STUDY: Retrospectively analyse in LHTO performed TKRR operations to discrim reasons of failure and to recomend STHO treatment rules. **MATERIALS:** Retrospectively review of medical records of 137 p who undergo TKRR surgery in our institution between 2006 and 2009. Reasons of failure: Aseptic, 72 p (loosening – 40 p, malposition – 12 p, wear – 8 p, instability – 6 p, periprostetic fractures – 5 p, stiffness – 1 p.) Septic, 65 pts. according to Tsukayama classificaton: Type 1 acute postoperative infection13p Type 2 acute chronic infection46p Type 3 acute haematogenous infection2p Type 4 positive intraoperativecultures4p. **METHODS:** Retrospective obsarvational study of medinal records including patients with TKRR was performed in period of time 2006 – 2009. Microsoft Excel statistics program: interview of patients by independent investigator according KOOS. **RESULTS:** KOOS Score quality of life. Total respondents 2006 – 2009,106 p. (didn't respond - 26, died - 2) No changes in quality of life 12.9% Mildly 12.5% Moderately 25.6% Severly 27% Totally 27% Infection (% of success cate) 2 stage exchange 39 p -92% Arthroscopic debridement 24 p- 50% Open debridement 6 p -67% Conservative treatment 3 p- 67% Removal of prosthesis 5 p-80% Arthrodesis 2 p -100% Amputation 1p-100%. **CONCLUSIONS:** 1. Treatment rules of noninfected cases – stability In loss of cortical support one condyle young patients (structural allgrafts, wedges) In loss of cortical support on one condyle in older patients, circular loss of support on both condyles (wedges, cuveret or hinge implants) 2. In cases of infection two stage revision.

Abstract no.: 29246

A TECHNIQUE TO OVERCOME CHALLENGES IN POSITIONING PATIENTS FOR DHS

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Intertrochanteric fractures of the femur are common fractures in the elderly. DHS fixation is the gold standard. Contralateral Ankylosed Hip limits positioning and challenges imaging to facilitate good fixation. Ulceration of the contralateral leg further limits the usage of traction kit. We recommend a technique of using table Leg section of the affected side positioned in the socket of contralateral side to hold the contralateral leg without using traction kit. AP & Oblique imaging were used to fix the fractures.

Abstract no.: 29249

INTRAOPERATIVE ACL FOOTPRINT ASSESSMENT - ANATOMICAL RECONSTRUCTION THROUGH COMPUTER NAVIGATION

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The ACL functions to resist anterior translation of the tibia and excessive lateral and medial rotation, stabilizing the knee throughout the normal range of joint motion. In situ biokinematic studies have indicated that double-bundle "anatomical" reconstruction more closely resembles tensioning and rotator force patterns of the intact ACL than single-bundle grafts and encourages increased stability in flexion and extension. "Anatomical" reconstruction implies graft fixation near the native ACL footprint which is postero-medial on the lateral femoral condyle, 7.9 ± 1.4 mm shallow from the over-the-top position in the notch and 4.0 ± 1.3 mm low from the intercondylar notch roof. At its tibial attachment, antero-lateral to the medial tibial spine, it is found 11.52 mm and 10.53 mm from the anterior intra-articular border of the tibia in males and females respectively. The ACL also has a unique micro-structure which promotes strength and resilience throughout the normal range of motion and when impinged near its tibial attachment by the anterior rim of the intercondylar fossa on full extension. Graft choice is thus an important aspect of reconstruction but is not the focus of this review. Rather, the ability of computer assisted surgery using navigation systems such as OrthoPilot® to ensure proper joint mapping and promote accurate graft positioning near the native ACL footprint will be outlined. Notch assessment through navigation additionally identifies potential sites of impingement and optimizes tunnel positioning, relaying unique patient-specific geometrical data to the computer, and accordingly promotes individualized and anatomical ACL reconstructive surgery.

Abstract no.: 29251

ASSOCIATION OF MENISCUS AND CARTILAGE LESIONS WITH ANTERIOR CRUCIATE LIGAMENT TEAR

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Introduction: The objective of this study was to report the incidence of meniscal and articular injury in patients suffering from anterior cruciate ligament (ACL) deficiency. Methods 140 consecutive patients who had received primary ACL reconstruction were recruited. The cartilage and meniscus injuries were recorded by two orthopaedic specialists at the time of surgery using a standard documentation system. Results 40 patients (29%) suffered from partial ACL tear and 100 patients (71%) suffered from complete ACL tear. Meniscus injuries were identified in 91 patients (65%). Cartilage lesions were identified in 62 patients (44%). 23 patients had significant lesion (Outerbridge grade 3 or 4) with a mean size of 166.1 mm². Meniscal tears were less likely to be found in patients suffering from partial tear ACL ($p=0.016$, chi square test) and those receiving early surgical intervention within 12 months ($p=0.041$, independent t test). The meniscus injury in patients having surgical delay was less likely to be salvageable ($p=0.009$, independent t test). Status of ACL tear was not associated with severity of cartilage lesion. Patients older than 35 years old were more likely to suffer from cartilage injury ($p=0.001$). Patient with cartilage lesions had longer surgical delay (mean 22.5 compared with 11.9 months, $p=0.006$). Presence of meniscal tear increased risk of cartilage lesions ($p=0.007$). Conclusions: Increased age and surgical delay increased the frequency of injuries of the meniscus and articular cartilage in patients suffering from ACL tear.

Abstract no.: 29253

RESULTS OF TOTAL KNEE ARTHROPLASTY WITH A SINGLE PROSTHETIC DESIGN AFTER A MINIMUM FOLLOW-UP OF 5 YEARS

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Purpose: To retrospectively evaluate the midterm results after total knee replacement using a posterior-stabilized prosthesis. Material and methods: We analyzed 97 consecutive knee replacements in 86 patients performed between January 2003 and December 2005 using the NexGen implant. Mean age was 65.5 years (52-75), with 65 female and 21 male patients. In 28 cases no patella resurfacing was performed. Diagnoses were primary osteoarthritis – 85,6%, post-traumatic arthritis – 9,3% and osteonecrosis 5,1%. The evaluation was performed according to the Knee Society Score, Functional and Knee Society Radiographic Score. 17 patients (19 knees) were excluded from the study. Results: There were no cases of aseptic loosening at a mean of 5.8 years after surgery (5-8 years). One knee had been revised for infection. The mean preoperative Knee Score improved from 27,2 to 83,4 and the Function Score improved from 48,2 to 86,3. Radiolucent lines in more than two zones were found in 9 femoral components and in 17 tibial components. Osteolysis was observed in 11 cases (2 femurs, 7 tibias and 2 both components). There were 3 radiographically loose knees (1 of the femoral components, 2 of the tibial components). In our series the 5 year survivorship has been 96.2% for aseptic loosening. Conclusion: The overall results from using the implant were good with a minimum follow up of 5 year, supporting the use of this design. A longer follow-up is needed to confirm the durability of the implant.

Abstract no.: 29254

FACTORS DETERMINING THE LENGTH AND DIAMETER OF MEDIAL HAMSTRING GRAFT

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Introduction: Ipsilateral Medial hamstring is a commonly used autograft for ACL Reconstruction. This paper investigated the potential factors that determine the size of the graft. **Method:** From 2008 to 2010, 102 patients receiving hamstring ACL reconstruction were recruited. Before the operation, the body height, body weight and peak torques of the flexors of both the injured and healthy limb were measured using Cybex isokinetic machine. The length and diameter of the graft were measured during the surgery. The possible association between the sizes of graft with the above factors was examined using Pearson's correlation. **Result:** There were 90 males and 12 females with an average age of 27 years old. The average body height and body weight were 171 cm and 71 kg respectively. Body height was significantly associated with both the length of semitendinous ($r=0.3$, $p=0.003$) and gracilis ($r= 0.446$, $p<0.001$). There was a moderate correlation between the diameter of semitendinous and gracilis ($r=0.586$, $p<0.001$). The diameter of the semitendinous and gracilis were both significantly related to the body weight ($r=0.502$, $p<0.001$ and $r=0.39$, $p<0.001$). Significant association was found between the diameters of semitendinous and gracilis with the isokinetic peak torque of the contralateral knee flexors at all speed ($p<0.05$). **Conclusion:** Body height, body weight and isokinetic peak torque of the contralateral knee were useful predictors of the size of medial hamstring graft.

Abstract no.: 29255

CONCEPT AND TRIAL OF NEW EXTERNAL FIXATION WITHOUT EITHER PINS OR WIRES

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External fixator currently in use for fracture fixation consists of pins or wires which connect bone to the main unit located outside of body. This traditional external fixator has some problems, e.g., pin tract infection and inflammation, irritation, loosening or breakage between pin (wire) and body of fixator, and etc. Most of these problems arise from pins or wires penetrating skin to connect bone to the main unit. To solve these problems, new external fixation system without either pins or wires was invented. This fixation system consists of magnetized plates or screws covered by biocompatible material and a magnetic field generator outside of the human body. A magnetized plate is fixed to proximal fragment and another one is fixed to distal fragment each other at the intact portions apart from fracture site. When the magnetic field generator located outside of extremity ingenerates magnetic field, each magnetized plate is pulled in each other and both fracture fragments are fixated. Because neither pin nor wire is essential for this system, problems caused by pin or wire are solved. This system also have some drawbacks, e.g., high level of magnetic field that may influence the human body and circumstances, care to carry heavy apparatus, difficult control of magnetic force. However, these problems are to be solved as technology advances. Basic structure of traditional external fixator has been unchanged over long periods of time. This new external fixation system goes much beyond the conventional concept of external fixator.

Abstract no.: 29256

CLINICAL RESULTS OF TOTAL KNEE ARTHROPLASTY FOR SEVERE VALGUS DEFORMITY USING A LATERAL APPROACH

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Introduction: One of the factors that increases the difficulty of total knee arthroplasty (TKA) is valgus knee deformity. The most important aspect to consider is restoring the knee's mechanical alignment. The purpose of this study was to evaluate the clinical and radiological results after TKA for valgus knee deformities where axis correction was achieved with a lateral parapatellar capsulotomy. **Materials and method:** From January 2003 to December 2007 we performed a number of 31 TKAs in 31 patients with valgus knee deformity (26 female and 5 male). The mean age was 68.3 (range 56-74). Average valgus deviation was 21°, (15-35°). We used a lateral parapatellar arthrotomy and implanted a posterior stabilized prosthesis. The lateral defect was closed using Hoffa plasty. The average follow up period was 5.1 years (3-8). The evaluation was performed according to the Knee Society Score and Knee Society Radiographic Score. **Results:** Knee Society Score improvement from a mean preoperative value of 43 (35-50) to a mean value of 89 (85-94). Postoperative alignment was an average of 6.5° valgus (4-9°). All patients showed good valgus-varus stability within the follow up period. In 7 cases radiolucent lines were observed in more than two zones. There were no complications (patellar fracture, ligament avulsion or infection). **Conclusions:** TKA with a lateral parapatellar approach and Hoffa plasty is an effective technique in cases of valgus knee deformity. It facilitates axis restoration and at the same time provides easy access to the contracted structures, with better wound closure.

Abstract no.: 29258

**RETROSPECTIVE AND PROSPECTIVE COMPARATIVE STUDY
BETWEEN DYNAMIC HIP SCREW AND PROXIMAL FEMORAL NAIL IN
MANAGEMENT OF EXTRACAPSULAR FRACTURE NECK OF FEMUR**

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The incidence of fracture extra capsular neck of femur (inter trochanteric fracture femur) is increasing. The mainstay of treatment of these fractures is surgical in medically fit patient. This study aimed to compare the results of two established surgical modality in treatment of fracture inter trochanteric femur that is fixation of fracture with DYNAMIC HIP SCREW(D.H.S.) or with PROXIMAL FEMORAL NAILING (P.F.N.). 50 randomly selected patient with fixed inclusion and exclusion criteria were chosen for this study out of which 25 were treated with dynamic hip screw implant and 25 with proximal femoral nailing implant. The comparison points included union, functional outcome, early and late complication. Harris hip score was also assessed. It was found in the study that the average operating time for the patients treated with P.F.N was 70 minutes as compared to 85 minutes in patients treated with D.H.S. The intra operative blood loss is less in PFN as compared to D.H.S. PFN is a close, quick and less traumatic procedure and is biomechanically better implant. Medial placement of the implant reduces the bending stress and axial torque by reducing the distance between hip joint and the mechanical axis of the implant. Total complications were 16% with implant failure 6%, infection 4%, non union 2% & greater trochanter splintering 4%. In the reverse oblique type of fracture the P.F.N is the ideal implant of choice & provides best results in the present series.

Abstract no.: 29260

THE TREATMENT OF DISTAL FEMORAL FRACTURES USING THE LESS INVASIVE STABILISATION SYSTEM (LISS PLATES)

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We present a retrospective review of 39 patients (26 females and 13 males) treated with LISS plates for distal femoral fractures. The mean age was 70 years (range 18-102). The commonest mechanism of injury was simple mechanical fall. According to the AO classification, 24 patients with type 33A, 3 patients with type 33C, 10 patients with type 32A and 3 patients with type 32B. There were 6 periprosthetic fractures of which 2 occurred during total hip replacement. The mean follow up period was 13 months. One patient died 13 months after fixation of fracture. At the time of follow-up, 25 patients had united and the remaining patients were proceeding to union. The average time to union was 4 months (range 2-6). Twenty two patients had closed reduction. There were no deep infections, thromboembolic events, persistent pain or malunion.

Abstract no.: 29263

POSTERIOR DISLOCATION OF SHOULDER WITH HUMERAL SHAFT FRACTURE – A RARE CASE WITH REVIEW OF LITERATURE

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The posterior dislocation of shoulder with ipsilateral humerus shaft fracture is an extremely rare occurrence, with only six cases reported in literature. High index of suspicion is required for early diagnosis and good results. Another case is described here with up to date review of literature Introduction Shoulder is the most commonly dislocated joint in the body. Posterior dislocation of the shoulder is rare and accounts for only 1-4% of the injuries. Posterior dislocation with fracture occurs with an incidence of <1 % with the fractures most commonly being the posterior glenoid rim, tuberosities and the head. The association of posterior dislocation with humerus shaft is extremely rare occurrence with only few confirmed reports in the literature. In these injuries the posterior dislocation is commonly missed at the time of primary assessment. Delayed recognition of the injury often leads to significant shoulder dysfunction. Thus although the combination of injuries is rare a high index of suspicion and early diagnosis of the dislocation will improve prognosis. A case of posterior dislocation of the shoulder with ipsilateral humerus shaft fracture is described here with the difficulties in the diagnosis and management of the injury.

Abstract no.: 29265

POSTERIOR WALL ACETABULAR FRACTURES: A STUDY OF OPERATIVELY TREATED 85 CASES.

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This is a study of 85 cases of the fractures of the posterior wall of the acetabulum operatively treated between the period 2002 to 2005 giving a follow up of 3 years. 64 patients had isolated acetabular fractures and remaining had associated fractures. There were 69 men and 16 women in the study.(average age 44 years ; range 19 to 72 years) The indications of the surgery were (1.) displacement of more than 3 mm. (2.) an intraarticular fragment giving incongruity and interfering with the joint movement (3.) posterior instability of the femoral head (4.) roof arc $> 45\text{deg}$. The patients were classified as per the Letournel and Judet classification. 12 patients had posterior dislocation. Out of these 7 reported in the first 6 hrs and were reduced immediately. 5 patients reported more than 24 hrs. out of these 3 were reducible but 2 had to be taken to the OT for reduction. The surgical approach used was standard Kocher-Langenbeck. All patients received post operative prophylactic treatment od indomethacin. 5 patients developed heterotrophic ossification. Preoperative footdrop was seen in 8 patients out of which 5 recovered post surgery. Post op sciatic nerve palsy occurred in 3 patients out of which 2 recovered. 7 patients went to AVN of which 2 required replacements. The results were good to excellent as per the Merle d'Aubigne scale in 52, fair in 22 and poor in 12 patients.

Abstract no.: 29266

TREATMENT OF DISTAL TIBIAL FRACTURES USING LOCKING PLATE

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Introduction: Treatment of distal tibial fractures using minimally invasive plate osteosynthesis (MIPO) techniques may minimise damage to soft tissues and the vascular integrity of bony fragments. Locking plates are a rigid fixation and proper anatomical reduction is essential in order to avoid non-union. **Methods:** Multi-centre retrospective review of 60 patients (41 males and 19 females) treated with MIPO using the AO locking plate for distal tibial fractures. Their mean age was 42 years (range 14-86). **Results:** According to AO fracture classification; there were 32 patients with 43A type fractures; twenty 43B and eight 43C type fractures. The commonest cause of injury was low-energy trauma. Forty six patients had closed injury and 37 patients had closed reduction. Ninety three percent of the patients were non-weight bearing for the first six weeks post-op. All patients were fully weight bearing within an average period of 9 weeks (range 0-20) Average time to union was 4 months. Twenty two percent of the patients had further surgery (removal of metalware) due to prominence. Six patients had superficial wound infection successfully treated with antibiotics. There were 2 non-unions; one patient is a chronic heavy smoker and the other patient underwent autologous bone grafting and failed to unite. There were no failures of fixation. **Conclusion:** MIPO is an effective method of treatment for distal tibial fractures. The use of indirect reduction techniques and small incisions is technically demanding but decreases surgical trauma to soft tissues. It is a rigid fixation and therefore, proper anatomical reduction is vital.

Abstract no.: 29269

EFFECTIVE BONE-GRAFT APPLICATION IN SPINAL FUSION

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Background: The use of bone graft is a routine procedure during spinal fusion to promote bone union. Placement of the graft in the lateral gutter around the pedicle screws may be awkward. We propose a cheap and simple method that aids optimal bone graft placement and decrease the chances of bone graft displacing centrally, into the area of decompression. **Technique:** In our unit, we use a combination of autologous and allogenic bone graft. 5ml syringes are prepared to form bone graft applicators by cutting the syringe tips off (Figure1). The prepared bone graft mixture with venous blood is manually compressed into the syringe, with the plunger drawn out (Figure2&3). The graft filled syringe is then used as the graft applicator to the targeted areas with a higher degree of accuracy. The syringe plunger is longer than the cut syringe, and acts as a blunt and safe aid for graft impaction into the desired area. This aids compression in the required area and limits any inadvertent displacement or migration of graft fragments into the decompressed canal or away from the fusion site. We have used this technique with no known disadvantages or complications. **Discussion:** In the climate of pressure on Health Systems worldwide, with multiple driving forces pushing towards efficiency and cost-cutting, we present this simple, easy to use and cheap applicator of bone graft. The technique can be used to introduce bone graft into other areas of the body maximising delivery to the required site and minimising graft displacement.

Abstract no.: 29271

THE EPIDEMIOLOGY OF DEEP PROSTHETIC JOINT INFECTION IN A TERTIARY REFERRAL CENTRE 2006-2008

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INTRODUCTION: Deep periprosthetic joint infections (PJI) in total hip replacements (THR) and total knee replacements (TKR) cause significant morbidity and mortality. This 36 month analysis identifies whether the organism can be determined by the timing of presentation after primary surgery. **METHODS:** 126 deep PJI were diagnosed from organisms cultured from intra-operative fluid and tissue samples taken at revision surgery at the study institute between January 2006 and January 2008. Deep PJI organism was diagnosed when 2 or more intra-operative samples grew the same organism(s). An analysis was then made using these positive PJI results with a regional arthroplasty audit database. PJI were grouped by the time of presentation from the original primary surgery. **RESULTS:** 71 hip and 55 knee patients were identified with deep PJI, out of a total of 2,187 primary THR and 2,139 primary TKR performed over 3 years (incidence 1.4% THR and 1.2% TKR). The most common organism was *Staphylococcus aureus* in THR and Coagulase Negative Staphylococcus (CNS) in TKR ($p<0.01$). There were no trends between the timing of presentation and the organism identified in either the TKR or THR groups. **CONCLUSION:** *S. aureus* and CNS are the most common organisms to cause deep PJI. The presence of significantly more CNS infection in TKR compared to THR is a new observation, which has significant clinical implications in the use of antibiotic regimes to prevent and treat PJI.

Abstract no.: 29275

ANKLE FRACTURES: COST BENEFIT WITH EARLY OPERATIVE FIXATION

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Introduction: Hospitals are increasingly required to make cost savings. Delays in ankle fracture fixation can result in an increased duration of hospital stay, complication rate and blistering, further delaying fixation. It is uncommon for an ankle to be too swollen to undertake operative fixation on the day of admission. Our aim was to review the length of hospital stay of ankle fractures at a district general hospital. **Method:** We conducted a retrospective comparative case series of all ankle fractures managed by open reduction internal fixation over a three month period. Admission date, operation date, fracture type and length of stay were recorded. **Results:** 25 ankle fractures were operated on during the study (13M:12F). 8 were bimalleolar, 17 unimalleolar. 6 of 25 fractures were fixed on the day of admission having an average in-patient stay of 2.8 days. Two elderly patients skewed the data, having an inpatient stay of over 40 days. However, excluding these the average stay in those operated outside the 24 hour window was 7.1 days. There was no significant difference between the ages of each group. **Conclusion:** Fixation on the day of admission results in significantly reduced hospital stay, improving patient satisfaction, bed availability and cost. Based on an estimated cost of £225 per night for an acute trauma bed, fixing ankle fractures on the same day saves £965.50 per patient. As a result of this study, the admission and same day operation of ankle fractures was streamlined making a significant cost saving.

Abstract no.: 29277

TREATMENT OF SOFT TISSUE DEFECTS AFTER TKA USING SAPHENOUS NEUROCUTANEOUS ISLAND FLAPS

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Purpose: The purpose of this study was to evaluate clinical outcomes in patients receiving saphenous neurocutaneous island flaps for reconstruction of soft tissue defects after total knee arthroplasty (TKA) or Revision TKA. Materials and Methods: Five patients (2 men, 3 women, mean age 64.8 years) of soft tissue defects after TKA or R-TKA were treated with saphenous neurocutaneous island flaps between November 2001 and August 2007. The mean follow-up period was 4.5 years. Each initial diagnoses were rheumatoid arthritis, arthritis due to previous osteomyelitis, tuberculous arthritis, and infected TKA (2 cases). Soft tissue defects were located over the patella (1 case), patellar tendon (1 case), and medial side of the knee (3 cases). The flaps ranged in size from 3x4 cm to 8x5 cm. All flaps were proximally based. Results: All flaps survived completely. The postoperative range of motion was between 3° and 100°. Conclusion: Because saphenous neurocutaneous island flaps are well matched with local tissue and are tough, thin, pliable and sensate, they are an ideal option for reconstruction of soft tissue defects after TKA or R-TKA. Key Words: knee, arthroplasty, Soft tissue defect, Saphenous neurocutaneous island flap.

Abstract no.: 29278

**AUTOLOGOUS BONE GRAFTING TO AID TREATMENT OF ASEPTIC
TIBIAL DIAPHYSEAL NON-UNION**

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Background: The highest incidence of fracture non-union occurs in tibial shafts. Treatment of this condition remains controversial, however regardless of the surgical method used, bone grafting is invariably involved. It is common to harvest autologous bone graft from the iliac crest; however, we propose an easy and cost effective way to augment such surgical treatment of aseptic tibial shaft non-union, with bone graft harvested from the ipsilateral tibial intramedullary canal. **Technique:** At the time of the procedure (best when an exchange IM nail is used) the reamings obtained from the intramedullary canal found on the reamer tips are collected, including any excised bone fragments at the time of awl introduction. Once canal reaming is completed (where a variable amount of 15-20ml of autologous bone graft can be obtained), the harvested bone graft is probed back into the canal to be propelled distally by the insertion of the nail. **Discussion:** Animal studies have shown that bone debris obtained after reaming show positive alkaline phosphatase activity as well as enzyme activity indicating osteoblasts survive after reaming. Further studies showed that reaming debris supports callus building as much as conventional bone grafting. We acknowledge that this is not an accurate method of bone grafting the site of non-union if carried out closed; nonetheless, we believe this is an invaluable and cost effective augment to aid the treatment of this difficult surgical challenge without direct exposure and further disruption of the periosteum of the fracture site, through enhancement of the canal revitalisation.

Abstract no.: 29282

UNILATERAL TRANSFORAMINAL LUMBAR INTERBODY FUSION FOR POSTLAMINECTOMY SPONDYLOLISTHESIS

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Introduction: The management of postlaminectomy spondylolisthesis is a dilemma. The use of classic interbody fusions (PLIF, ALIF) is associated with several technical problems and complications. TLIF is a useful innovation with limited reports on its use in that indication. The objective of this work is to analyze the clinical and radiological outcome of this technique for postlaminectomy spondylolisthesis and evaluate its possible complications.

Methods: This study included 28 patients with postlaminectomy spondylolisthesis. The average age was 43y. All patients complained from persistent LBP and 21 had additional sciatica and neurologic claudication. Fifteen had L4/5 and 13 had L5/S1 affected. MRI revealed recurrent disc lesions in 19 patients. Unilateral TLIF was performed including factectomy, discectomy, single cage insertion and pedicle screw instrumentation. No direct reduction maneuvers were executed and minimal dissection of the dural sac or epidural adhesions was performed. Patients were followed-up for an average of 3.5y.

Results: The ODI decreased from an average of 52 to 12 points. Sagittal translation was reduced from an average of 31% to 13% and the fusion rate was 92%. Disc space height improved by an average of 28%. There were no dural tears and 5 postoperative complications but none required operative intervention.

Conclusion: Unilateral TLIF offers a safe and efficient alternative to treat postlaminectomy spondylolisthesis, which avoids the possible complications of standard anterior or posterior lumbar interbody fusions. The transforaminal approach avoided excessive manipulation of the dura, allowed immediate load sharing stability and delivered a satisfactory clinical and radiological outcome.

Abstract no.: 29283

THE HIDDEN OSTEOPOROSIS OR OSTEOPENIA IN ASSOCIATION WITH OTHER SPINAL PATHOLOGY

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500 five hundred patients with common spinal pathology in our locality were found to have additional (hidden) osteopenia or osteoporosis proved by DEXA (Densitometry) of the whole spine. 341 patients had osteoporosis, and 159 had osteopenia. 50 were considered as failed back surgery syndrome. All were above the age 50 years (50 – 84 years). The study duration was one year; December 2009 – December 2010. The common pathology in order of frequency were spinal stenosis, disseminated spinal secondaries, sickle cell disease, rheumatoid arthritis, degenerative changes, tuberculosis, spondylolisthesis, disc prolapsed, fibromyalgia syndrome, all showed improvement after treating the associated osteoporosis or osteopenia by the cardinal treatment for six months. The results indicates the importance of searching for osteopenia and osteoporosis as a routine for patients with any spinal pathology after the age of 50 years this may help in reducing the incidence of failed back surgery syndrome.

Abstract no.: 29284

SKELETAL DYSPLASIAS: DIAGNOSTICS AND TREATMENT

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Authors summarize longstanding experience with the diagnosis and comprehensive treatment of skeletal dysplasias (SD). SD comprise the main part of constitutional disorders of skeleton. Primary SD result from mutated genes that are expressed in chondro-osseous tissue. Secondary SD are caused by abnormalities of extraosseous factors with secondary effects on skeletal system i.e. metabolic, enzymatic and hormonal disorders. Incidence is estimated 0.30 – 0.45 per 1000 live birth. Rapid advances have been made in identifying chromosomal locus and/or the molecular changes responsible for definition of conditions that help further understand the pathogenesis of individual disorders. Treatment is mostly still symptomatic based on interdisciplinary approach. Orthotic and surgical treatment comes out from biomechanical knowledge of growth. The main aim is correction of long bones and spine deformities, shortening and/or lengthening of long bones and reconstruction of hand and foot malformations (by physiotherapy, bracing, surgical procedures, etc.) and bone metabolism (e.g. calcitropic drugs) with the aim to achieve an individual ideal peak bone mass and optimal biomechanical properties of skeleton in adulthood. During 16 year existence of the Ambulant Centre for Defects of Locomotor Apparatus in Prague the authors diagnosed 101 nosologic units of SD in a group of more than 500 patients. The group of patients with SD was classified according to the 7th version of Nosology and Classification of Genetic Skeletal Disorders (2006). The lecture is supported by overview of diagnostic and therapeutical achievements. Key words: skeletal dysplasias, genetic diagnosis, classification, comprehensive treatment.

Abstract no.: 29285

**TRANSFORAMINAL LUMBAR INTERBODY FUSION USING ONE
DIAGONAL FUSION CAGE WITH UNILATERAL PEDICLE SCREW
FIXATION FOR TREATMENT OF INTRAFORAMINAL LUMBAR DISC
HERNIATION**

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Objective: To retrospectively study the short-term and mid-term efficiency of transforaminal lumbar interbody fusion (TLIF) using one diagonal fusion cage with unilateral pedicle screw/rod fixation in the treatment of intraforaminal lumbar disc herniation. **Methods:** From January 2005 to December 2008, 29 patients (17 males and 12 females, aged from 43 to 71) with single-level intraforaminal lumbar disc herniation were treated with unilateral decompression and TLIF using one diagonal fusion cage with ipsilateral pedicle screw/rod fixation. Length of hospital stay, operating time, blood loss and medical costs were recorded and compared with the literature. Interbody bony fusion was detected by routine radiographs and computed tomography scan. The pain, disability status and physical functioning were pre- and post-operatively evaluated by the Visual Analog Score (VAS), Oswestry Disability Index (ODI) and Short Form 36 Health Survey Questionnaire (SF-36), and the short-term and mid-term clinical outcomes were then analyzed. **Results:** The patients were followed up for an average of 44.7 months (range, 18 to 66 months). The pain relief in the VAS and the reduction of the ODI and SF-36 scores were significant after surgery and at follow-up ($P < 0.05$). No severe complications occurred during hospital stay. Interbody bony fusion was achieved in every case, and no cage excursion or subsidence was observed. No patients underwent revised surgery. **Conclusions:** TLIF using one diagonal fusion cage with ipsilateral pedicle screw/rod fixation is an effective treatment option in patients with intraforaminal lumbar disc herniation.

Abstract no.: 29286

SPONDYLOLISTHESIS IN THE SOUTH OF IRAK

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Forty six patients with lumbar spondylolisthesis of different grades presented with backache with or without radicular pain were studied between November 2008 to January 2011, underwent detailed evaluation clinically and radiological (stress radiographs, using two methods to stress the lumbar vertebrae, and so divided into two groups conservative and operative. The operative group were divided into: Fenesteration alone, fixation alone, and fixation and fusion. Forty were female, six were male, average age was 50 years, 14 cases were chosen for conservative and the result was good in (11) cases, poor in (3) cases. In seven cases (15.5%) decompression was done and the result was good in 6 cases (85.7%), twelve cases (26.6%) treated by fixation, the result was satisfactory in (11) cases (91.6%), (14) cases (28.8%) were treated by both decompression and fixation, and the result was good in all cases.

Abstract no.: 29290

MANAGEMENT OF LARGE ACETABULAR DEFECTS IN OLD UNTREATED FRACTURES OF THE ACETABULUM IN PATIENTS UNDERGOING THR

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Thirteen Patients (11 males and 2 females) were subjected to THR for old untreated fracture dislocation of the hip presenting after a mean of 7.5 months after injury. All were unable to walk without crutches. X-rays revealed large bony deficiency of the posterior pillar of the acetabulum. Preoperative CT scans were performed in all patients. The hip was exposed through the postero lateral approach and the acetabular defect was reconstructed using a large block of bone graft obtained from the femoral head and fixed with screws. Non cemented sockets were used in 7 and cemented sockets in 6 cases. Additional augmentation with a wire mesh was required in the cemented sockets. The stem insertion was routine cemented/uncemented. Patients were followed up for a period of 2 years. Results: All patients had a satisfactory outcome with complete graft union at the end of 3 months. All were able to ambulate without support after 3 months and were pain free. There was no evidence of implant loosening after a followup of 2 years. Conclusion: Old untreated fracture dislocation of the hip can be treated satisfactorily with THR with reconstruction of the posterior pillar of the acetabulum. Both cemented and non cemented THR produced satisfactory results.

Abstract no.: 29293

**CONSERVATIVE TREATMENT OF FOOT ULCER WITH OSTEOMYELITIS
USING MAGGOT THERAPY**

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Background: Even though surgical treatment of ulcers combined with osteomyelitis in patients with diabetic foot is more common in general, conservative therapy is also possible. This approach is suitable in compliant patients with sufficient perfusion of the lower limb, with first attack of osteomyelitis and presence of antibiotics-sensitive microorganisms in the ulcer. Biological debridement with use of maggot therapy as a part of conservative treatment especially in necrotic, infected diabetic ulcers can be beneficial. The aim of this case report is to show the positive effect of maggot therapy in a patient with complicated foot ulcer with osteomyelitis. **Case History:** Sixty-one-year old male, type 2 diabetes, admitted to our foot clinic with infected ulcer of the 2nd metatarsal area and osteomyelitis of the 2nd and 3rd metatarsus of the right foot. Three weeks before he had been admitted to another clinic due to flegmona treated by local debridement and peroral antibiotics. Discharged two weeks later without antibiotics and no off-loading recommended. At our clinic he underwent complex treatment including local debridement, intravenous antibiotics, revascularisation by percutaneous transluminal angioplasty, off-loading and improvement of glycaemic control. Maggots were applied directly into the ulcer for five days, with significant reduction of necrotic tissue during that period. Complete healing took six months. **Discussion:** Our case report shows the efficiency of specialised diabetic foot care using maggot therapy for local debridement as well as the benefit of this therapy in conservative treatment of ulcers complicated by osteomyelitis. This case report was supported by grant MO0901-8-8140.

Abstract no.: 29294

**OUTCOME OF PROXIMAL FEMORAL OSTEOTOMIES IN CHILDREN
USING THE MONTGOMERY HIP SCREW**

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Introduction: We report the clinical and radiological outcome of proximal femoral osteotomies in children using the Montgomery hip screw. Methods: Forty six patients undergoing 62 proximal femoral osteotomies under the care of the senior author over a 4-year period were reviewed. Results: The overall complication rate was 1.6% (1 patient) who developed severe pressure sores due to the hip spica. There were no re-operations, no fractures and no long-term complications. There were no complications related to removal of metalware. Conclusions: The Montgomery hip screw is a safe method of fixation of proximal femoral osteotomies in children.

Abstract no.: 29299

ROLE OF ULTRASOUND DENSITOMETRY IN ASSESSMENT OF STRUCTURAL-FUNCTIONAL STATE OF BONE IN POSTMENOPAUSAL WOMEN

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The aim of the study was to estimate the informative value of ultrasound densitometry in evaluation of structural-functional state of bone in Ukrainian postmenopausal women. 274 postmenopausal women aged 45-89 years were examined, average age 65.5 ± 0.5 years, duration of postmenopausal period 16.4 ± 0.6 years. Bone mineral density (BMD) was measured by Dual-energy X-ray absorptiometer (DXA) "Prodigy" and ultrasound densitometry (QUS) "Sahara" of the calcaneus. There is the difference in distribution of bone indexes in depending of used methods. Among women which had osteoporosis of femoral neck by DXA, 27% had osteoporosis, 65% – osteopenia, 8% – norma data by QUS. Sensitivity and specificity of QUS indexes was low (with femoral neck – 26% and 17%, total hip – 35% and 16%, lumbar spine – 20% and 21%, total body – 47% and 29% accordingly). Sensitivity didn't change substantially and specificity decreased due to duration of postmenopausal period. Moderate positive correlation was between BMD of total body and QUS ($r=0.58$, $p=0.0001$). Correlation between indexes of QUS and BMD of femoral neck, total hip and lumbar spine were significant, but lower. So, QUS of calcaneus is informative method in evaluation of structural-functional state of bone in postmenopausal women. DXA and QUS correlate significantly, higher in peripheral skeleton in compare with axial.

Abstract no.: 29300

THE TIBIALIS ANTERIOR TENDON AS A LANDMARK FOR ORIENTATION OF THE TIBIAL RESECTION GUIDE IN TKA

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INTRODUCTION: The tibialis anterior tendon is a commonly used marker for the centre of the talus in TKA. Other markers are the anterior edge of the tibia and the 1st intermetatarsal space of the foot. In the literature there is no evidence which marker is best suitable for the alignment of the proximal tibial resection block. We therefore conducted a study to find out which anatomic landmark reproduces the centre of the talus best.

MATERIAL AND METHOD: In a prospective study between 1/2008-6/2008 we included 29 patients for TKA (LCS DePuy WArshaw USA). We determined the preop. KSS, BMI and took a single leg view and a 3D MRI Analysis. In the MRI Analysis all 3 landmarks were determined and put into relation to a virtual MRI determined mechanical axis. The best landmark was chosen to align the tibial resection guide. Postoperatively the KSS and a single stance view was done to judge the result by a student -t-test. **RESULTS:** The MRI analysis showed that the tib. ant. tendon was on average the best landmark(-1,87 +/- 2,58mm)followed by the anterior edge of the tibia (-1,87 +/- 2,58mm)(p=0.859) and the first IM space(3,01+/- 8,48mm)(p=0,006). Only in case of a severe axis deviation the anterior edge of the tibia was better. **CONCLUSION:** The tib. ant. tendon is best suitable for the alignment of the extramedullary tibial resection guide in TKA.

Abstract no.: 29301

SURGICAL TREATMENT OF SYMPTOMATIC PATELLAR LATERAL SUBLUXATION WITH TILTING

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Introduction: Patellar lateral subluxation with tilting is a common orthopedic disorder due to tightness of lateral retinaculum with loosening of medial retinaculum or medial patellofemoral ligament insufficiency. If symptoms persist despite conservative treatment, surgical correction is indicated. **Materials and methods:** 45 patients with 51 affected knees were recruited between 2003 and 2009. Average age at operation was 24.7 yrs (range 12-51), symptoms duration of 4.8 yrs (range 1-20). Evaluation included 45 degrees Merchant view, Congruence, Lateral patellofemoral and Sulcus angle measurements, and Insall-Salvati ratio. Surgery included arthroscopic lateral release, miniopen advancement of medial retinaculum then suturing to patellar surface at knee flexion angle of 45 degrees and checking patellar tracking. Functional evaluation was performed according to Kujala scores. **Results:** 38 patients (42 knees) were followed for 35.5 (8-59) months. Pre and postoperative evaluation: Kujala scores 58.6 vs 91.7 ($P<0.05$), Congruence angle 30.5 ± 14.1 vs -6.8 ± 7.3 ($P<.01$), Lateral patellofemoral angle 11.1 ± 8.7 vs 5.3 ± 5.0 ($P<.01$), Insall-Salvati ratio 1.09 ± 0.09 vs 1.05 ± 0.11 ($P>.05$), Sulcus angle 141.9 (132-155). Patient satisfaction surveys showed 33 (86.8%) excellent, 3 (7.8%) good and 2 (5.2%) fair results. No recurrent subluxation or tilting was found. **Conclusion:** Proximal realignment of patellar with lateral release and advancement of medial retinaculum is an effective, durable treatment of symptomatic patellar lateral subluxation with tilting, and provides excellent results for most of patients.

Abstract no.: 29302

BACK PAIN AND OSTEOPOROSIS

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Research was aimed at studying the peculiarities of vertebral pain syndrome and its influence on life quality in women with postmenopausal osteoporosis in relation to localization and vertebral bodies' deformation types. 353 women in postmenopausal period aged from 50 to 89 years were examined and divided into groups depending on localization and type of vertebral deformations. The questionnaire, X-ray of pectoral and lumbar spine in two projections, morphometry of vertebral analysis were used. Intensity of vertebral pain syndrome in women with osteoporosis and its complications depends on localization of deformed vertebrae. In pectoral spine intensity of pain syndrome (VAS) was higher in women with fractures of pectoral vertebrae ($3,9 \pm 0,6$ points, $p < 0,05$) and vertebral fractures (pectoral and lumbar spine) of combined localization ($3,7 \pm 1,1$ points, $p < 0,05$) compared with fractures present only in lumbar spine ($2,7 \pm 0,7$ points). In lumbar spine intensity of pain syndrome (VAS) was higher in women with fractures of combined localization ($6,5 \pm 0,4$ points, $p < 0,05$) compared with fractures of vertebral bodies only in pectoral ($4,8 \pm 0,6$ points) or only in lumbar spine ($5,1 \pm 0,6$ points). Reliable aggravation of syndrome was explained by the presence of compression vertebral fractures in pectoral area ($p < 0,05$), while in the lumbar spine there were no reliable distinctions related to the fracture occurrence. The vertebral pain syndrome is observed with all types of vertebral deformations; however, its intensity is most clearly expressed in patients with compression fractures.

Abstract no.: 29305

THE INCIDENCE, AGE AND MALE FACTORS OF THE OSTEOPOROTIC FRACTURES, STRUCTURAL-FUNCTIONAL STATUS OF BONE TISSUE IN POPULATION LIVING IN THE MOUNTAINOUS REGION OF ZAKARPATYYA

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To discover the incidence, age and male factors of the osteoporotic fractures, structural-functional status of bone tissue in population living in the mountainous region of Zakarpattya. We were examined 71 women, living in the mountainous region of Zakarpattya (village Kobyletska Polyana) 40-89 years (mean age $57,8 \pm 1,4$ years) and 53 woman (mean age $56,7 \pm 1,5$ years) living in low – latitude village Velykyi Bychkiv. All women were divided into two age groups. The BMD was determined by DXA using a densitometer Achiless +, Sahara. In women, living in the high-latitude region of Zakarpattya, with aging BMD decreases: 50-59 years – on 5,4%; 60-69 years – on 17,5%; 70 years and older – on 18,4 % comparing with age group 40-49 years. The speed of bone tissue loss in women from the mountainous region is significantly lower compared with the reference data of Ukrainian population of women: bone loss comparing with the age group 40-49 equals in age group 50-59 5,4% and 9,9%; 60-69 years – 17,5 % and 13,2 %; 70 years and older – 18,4 % and 19,7%. The incidence of osteoporosis is significantly higher in representatives of the low-latitude region comparing with the representatives of the mountainous region. Bone mineral density index in age group 40-59 does not decrease in the high – latitude village, meanwhile in low – latitude village BMD decreases almost on 30 %. The age significantly influences the decrease of estimated bone mineral density in women living in the mountainous region of Zakarpattya.

Abstract no.: 29306

**MG IMPLANT DEGRADATION MONITORING IN A LIVING RAT MODEL:
HOW DOES THE BONE REACT AFTER DEGRADATION OF THE
IMPLANT?**

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As osteosynthesis material in a growing skeleton biodegradable implants have to fulfill specific properties: stability during fracture healing, rapid degradation and full regeneration of bone structure in a period of 12-15 months after implantation. For this purpose new biodegradable metallic materials have been developed, from which magnesium show the most promising attributes. However, investigations focusing on the bone behavior at the end of the degradation process are lacking. This study aimed the bone behavior during and after complete degradation by continuous micro CT monitoring. A fast degrading Mg alloy (LV1) was chosen to evaluate degradation in an appropriate time period - a comparison to a slow degrading Mg alloy (WZ21) was made. Materials and method: Mg pins LV1(Mg-Zn-Mg-Ca) and WZ 21(Mg-Zn-Mg-Ca-Y) were implanted into 12 femoral bones of five-week-old male Sprague–Dawley rats. The rodents were permitted full weight-bearing. Microfocus-computed-tomography (CT) was performed 5-7 days after operation and each month up to 9 months after operation. The pin volume, the pin surface and the volume of the appeared gas was quantified. Results: LV1 degraded rapidly with large amounts of gas bubbles and was completely dissolved after 3 months. WZ21 corroded slower with manageable lower gas volumes and was not fully degraded after nine month. Rodents were never observed to limp or being compromised in mobility. Despite the large amounts of gas in LV1 at the beginning, Micro CT imaging showed healed bone with anatomical structure after 5 months. No fracture or entry point of implant was discernable.

Abstract no.: 29308

SURGICAL TREATMENT OF CONGENITAL RESISTANT CLUBFOOT - PRESENTATION OF A SURGICAL TECHNIQUE

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Introduction: In our department the access of Cincinnati began to be used with this propose since 1990. From the year 2000, after the revaluation of the technique used until then, we developed a standardized of the release of the damaged structures on the clubfoot, through a sequenced surgical technique, including the lengthening of the anterior tibial muscle tendon. **Goals:** Demonstrate that with a dynamization of the surgical strategy, creating a routine to the release of the tendinous, capsular and ligamentar structures. Always following the orientation from hind foot to forefoot decreases the exposure of the wound, minimizing the complications of this surgery. **Surgical Technique 1.** Access of Cincinnati: Begins with skin and subcutaneous tissues of the lateral malleolus until the head of the first metatarsus ; 2. Tendons : Achilles, posterior tibialis, flexor digitorum longus, flexor hallucis longus, anterior tibialis and abductor hallucis; 3. Ligaments and capsules: tibialtarsal joint, subtalar joint, talonavicular joint, naviculuncuneiform joint and theirs ligaments; 4. Suture Simple or intradermally (less severe feet). **Conclusion:** This strategy allows an orderly release of tendons, joint capsules and ligaments structures always from hind foot to fore foot, minimizing the time of exposure of the patients.

Abstract no.: 29310

COMPRESSION SYNDROME IN THE SURGICAL TREATMENT OF CONGENITAL CLUBFOOT - CASE REPORT

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Identification: Name: B.C.M. Gender: female Age: 05 years old Color: black march: already started pathology: congenital clubfoot (resistant) base pathology: Arthrogryposis Objective: 1 - demonstrate care when you choose the surgical treatment, open, in congenital clubfoot; 2 - even with all the risk, the result is very good, as deformity correction. Treatment after the diagnosis of compressive syndrome: first -> a recall of infusion medium and ante-foot- made daily with dressing germ (chlorhexidine) and saline; second -> prepare the skin for the use of a free graft- made areas debridement of skin necrosis and subcutaneous tissue, until the formation of granulation. Under general anesthesia, MADE THE debridement of necrotic tissue and wound dressing with ointment silver sulfadiazine 1% + Curatec. Is kept with a splint to maintain correction of deformity corrected. Third -> free graft placement of tissue granulated: all with tissue granulated and without infection is placed a free skin graft on all fabrics of granular region dorsal and postero medial foot. Conclusion: by the authors indicate this surgical correction of resistant clubfoot using access Codevilla. Provided that keep the patient hospitalized under direct observation of medical and nursing. Must make use of a drainage (arpirativo 3.2 mm), TO is not in the unpleasantness of surprise.

Abstract no.: 29320

GIANT CELL TUMOR OF METATARSAL: OUR EXPERIENCE OF TREATMENT WITH FREE FIBULAR GRAFTING IN SEVEN PATIENTS

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INTRODUCTION: Representing 6% bone tumors, GCT is however much more common in Indian and Chinese population. Foot is a rare site for GCT but when a bone tumor is diagnosed in foot, perhaps GCT is the most common diagnosis. Majority of GCT of foot occur in either calcaneus or talus with only scattered case reports pertaining to occurrence in other bones. GCT in foot shows aggressive behaviour with higher than usual incidence of multicentricity and transarticular spread. Treatment with either curettage or extended curettage has yielded high recurrences rates. We present our experience of GCT metatarsus treated with autologous fibular grafting in 7 patients. **MATERIALS AND METHODS:** On retrospective review of records, we found 7 biopsy confirmed cases of GCT metatarsus treated with en bloc excision of tumor and reconstruction with autologous free fibular graft. Patients were reviewed for tumor and treatment related complications and functional outcome. **RESULTS:** Average age of 7 patients at the time of surgery was 26.7 years with mean follow up of 3.4 years. Five cases were primarily diagnosed whereas 2 were recurrent cases. The distribution amongst metatarsals was first (4), second (2), third (1) and fifth (1). Two tumors involved whole metatarsus whereas rest were epimetaphyseal. Complications were recurrence (1), stress fracture of graft (1), pain (1). **CONCLUSION:** GCT in metatarsus is perhaps much more common than previously thought and management with free fibular grafting yields good results probably due to easy graft incorporation resulting from increased vascularity of the region.

Abstract no.: 29330

RARE CASE OF ANTERIOR EXPOSED DISLOCATION OF THE ELBOW

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Introduction: The elbow is a very stable joint so it requires an important amount of force to dislocate it. So, anterior exposed dislocation of the elbow is a rare type of lesion and usually is associated with a fall with trauma to the elbow posterior part. **Case report:** A 45 years-old women was victim of a fall with left elbow trauma. At emergency room admission the patient had swelling, deformity and exposed elbow dislocation. The elbow present itself shorter and in supination, the humerus had a posterior distal prominence but without neurovascular deficits. The radiological study confirmed the presence of anterior elbow dislocation without associated fractures. The dislocation was promptly reduced and the limb was immobilized with a cast during three weeks. At three weeks follow-up the patient kept having no neurologic deficits and had limitation of the elbow range of motion (10 – 100 degrees) and then initiated functional rehabilitation. At three months follow-up, the patient had no pain with normal elbow range of motion, without neurologic deficits or instability. The patient at this time had no limitation in daily activities or in work capacity. **Discussion:** An exposed dislocation of the elbow is a serious lesion with emergent need of dislocation reduction. There are different consequences of this lesion: neurologic and vascular impairment, elbow motion limitation, valgus instability and posterolateral instability. In this type of dislocation the promptly reduction and the inexistence of neurovascular lesions or associated fractures grant a good prognosis and were determinant in the good functional result.

Abstract no.: 29331

DISTAL RADIUS FRACTURE AND SCAPHOLUNATE DISSOCIATION - CASE REPORT

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Introduction: Management of intra-articular fractures is directed toward restoring the normal anatomy of the distal radius and ulna to maintain the adequacy of reduction of the articular surface. This fracture can be associated with scapholunate dissociation. In scapholunate dissociation, the abnormal kinematics leads to a decrease in surface area contact at the radioscapheoid joint, which causes an increase of the concentration of load, leading to the development of degenerative arthritis. The goals of the surgical reconstruction are to relieve the symptoms associated with the instability, maintain motion, and prevent the development of degenerative arthritis. **Case report:** it concerns a 32-year-old that had a fall on an outstretched hand and attended the emergency room of our hospital in 13/10/08. At the admission he had deformity, swelling and pain of the wrist. Radiographs showed intra-articular fracture of the distal radius type 23.B2 AO classification and scapholunate dissociation. The patient was submitted to open reduction of the fracture and osteosynthesis with volar plate and was orientated to physical rehabilitation 1 month after surgery the fracture was healing and the scapholunate dissociation was correct, 2 months later the patient had complete mobility and returned to active life and work. **Discussion:** The importance of this case is to obtain the notion that after obtaining a correct reduction of the intra-articular distal radius fracture with the osteosynthesis with volar plate we could obtain also a correction of the scapholunate dissociation, prevent the carpal instability and degenerative arthritis and maintain correct carpal alignment.

Abstract no.: 29333

TIBIAL PLATEAU NONUNIONS: A REPORT OF THREE CASES

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Background: Tibial plateau nonunions are rare, with very few publications on the subject. The treatment of these fractures is demanding and requires meticulous pre-operative radiographic assessment and surgical planning. **Aim:** To report on the results of treatment of three tibial plateau nonunions. **Methods:** This is a report of three patients, two with Schatzker type VI and one with type IV fractures, which were initially treated conservatively. Their presentation ranged from 3 to 6.5 months post-injury, with varus deformity in all three patients. Two had pseudolaxity of the medial collateral ligament due to depression of the medial tibial condyle. CT scanning demonstrated the nonunion clearly. They were treated by exposure of the nonunion site, elevation of the depressed articular surfaces, bone grafting, plating, six weeks of casting, followed by a further six weeks of non weight bearing exercises. **Results:** At a follow-up which ranged from 7 to 22 months, all fractures had united with correction of the varus deformity. The three patients walked with a normal gait, a full range of motion in two knees, and a range from 0 to 115 degrees in the third, with normal radiographic alignment in all three. **Conclusions:** The treatment of tibial plateau nonunions follows the same principles used in the treatment of acute fractures, though their execution is more difficult in nonunions. Provided the articular congruity is restored, the outcome of tibial plateau nonunions can be as favourable as in acute fractures.

Abstract no.: 29336

EFFECTS OF INTRODUCING WORLD HEALTH ORGANISATION (WHO) SURGICAL SAFETY CHECKLIST IN AN ELECTIVE ORTHOPAEDIC CENTRE IN THE UK: A PROSPECTIVE AUDIT

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The goal of the WHO Patient Safety Safe Surgery Saves Lives guideline is to improve the safety of surgical care and reducing surgical errors by defining a core set of safety standards that can be applied in all countries and settings. This prospective audit was conducted to evaluate the effects of introducing the WHO guidelines of safe surgery on critical events and compliance to fill the forms in the elective orthopaedic theatres. The initial audit was performed from February 2009 to September 2009 before the introduction of WHO guidelines to report the critical events occurring in the theatres. The Guidelines were introduced as a pilot from November 2009 and was mandatory from February 2010. We re-evaluated the critical events reported and the number of checklist forms filled in each case from February 2010 to September 2010. Data was collected from the hard copies of the guidelines sheet used in the theatres. There were no guidelines sheets in the first phase. There were 46 critical events reported in the theatres during this phase. After the introduction of the WHO guidelines, the numbers of critical events were reduced to 35. Odds ratio 0.5 (C.I. 0.3-0.9), P= 0.01. The compliance with filling the form increased from 28.4% to 76.7% ($P<0.0001$) when it was made mandatory. Implementation of the WHO safe surgery checklist was associated with reduction in the rates of reported critical events. Making the forms compulsory significantly increases the compliance to fill them.

Abstract no.: 29338

PERI-OPERATIVE MULTIMODAL WOUND INFILTRATION FACILITATES IMMEDIATE POST-OPERATIVE PAIN MANAGEMENT AND REHABILITATION AFTER TOTAL HIP REPLACEMENT

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Multimodal local wound infiltration with local anaesthetics, adrenaline and non-steroidal anti-inflammatory agents can lower the opiate intake, reduce the length of stay (LOS) and enhance early mobilisation after total hip replacement (THR). A retrospective review of 150 patients undergoing primary total hip replacement was undertaken. Seventy five patients (cases) had their wounds infiltrated with ropivacaine, adrenaline and ketorolac by the operating surgeon, intra-operatively. A 19G wound catheter was inserted percutaneously into the hip joint. Patients received two further top-up doses of the same combination at 10 hours and 20 hours postoperatively. This group was compared to a control group (comparable in age and BMI) of 75 patients who did not receive any local infiltration. Opiate consumption in the first 48 hours after surgery and length of hospital stay were recorded. The median and Interquartile range (IQR) consumption of morphine in the treatment group was 35 mg (25, 49.5) compared to 55 mg (37,81) in the control group ($p = 0.002$). The median LOS was significantly reduced from 5 days (IQR 4,6) in the control group to 4 days (IQR 3,5) in the treatment group ($p= 0.0001$).The median time taken to walk after surgery were significantly reduced in the treatment group ($P<0.0001$). This is the largest series to demonstrate that a multimodal peri-operative wound infiltration technique in primary THR surgery leads to early attainment of immediate post-operative rehabilitation milestones and reduced LOS along with reduction in post operative opiate consumption.

Abstract no.: 29339

SEQUEL OF RADIAL HEAD FRACTURE/DISLOCATION IN A 14-YEAR-OLD CHILD

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Introduction: Radial head fractures and dislocations are traumatic lesions which require adequate treatment to prevent functional impairment, deformity, stiffness, pos-traumatic arthritis, nervous lesion and other complications. **Case report:** A 14-year-old child entered the emergency room with deformity and pain in the left elbow without recent traumatic event. He had a history of a fall with trauma to the left elbow when he was 10 years, but he didn't attend the emergency room. Since then he had deformity of the left elbow. At the physical examination he had limitation of the elbow range of motion 40-130°, limitation of elbow extension and impairment of pronosupination. Radiographs showed sequels of radial head fracture with posterior dislocation. The patient was submitted to surgical treatment with posterolateral approach with radial head excision and after he underwent physical therapy. At 2 months he showed correction of the elbow deformity, restoration of pronosupination (5-70° of pronation and 10-75° of supination) and 10 a 135° of elbow range of motion and he returned to daily activities. The patient had no functional impairment and with pronosupination capacity. In the Elbow Functional Assessment scale he improved from a preoperative score of 48 to a postoperative score of 92. **Discussion:** Radial head fractures can pass unnoticed and many times we came across the need to treat its complications. This represents a rare case of complex radial fracture with posterior dislocation that passed unnoticed for 4 years and was needed to correct its complications and prevent functional impairment and rigidity.

Abstract no.: 29342

OSTEOID OSTEOMA OF THE TARSAL NAVICULAR BONE PRESENTING AS CHRONIC FOOT PAIN

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Introduction: Osteoid Osteoma (OO) represents approximately 10% of all benign bone tumours and the incidence in the foot is reported in the range of 2%-10%. Because of their atypical clinical and radiological presentation they are often missed which results in delay in diagnosis results in unnecessary suffering for the patient.

Case report: We present the case of a 28 year old fork lift truck driver who presented with over 3 years history of chronic right midfoot pain that worsened on exertion. A collective review of investigations combined with the clinical picture confirmed the diagnosis of OO. Complete surgical excision of the lesion was carried out along with repair of the tibialis posterior tendon using anchor sutures.

Conclusion: Although Osteoid osteoma in the navicular is not common, we believe that it should be considered in the differential diagnosis of chronic foot pain in young patients with normal laboratory findings. A three phase bone scan combined with CT scan helps to confirm radiological diagnosis.

Abstract no.: 29343

**PATIENT'S PERSPECTIVE ON USING HEEL WEIGHT BEARING SHOES
AFTER FOREFOOT SURGERY**

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Introduction: Heel weight bearing shoes are commonly used for forefoot offloading during mobilization after forefoot surgery. However patient satisfaction and compliance may be affected due to the altered gait pattern that is conferred. The aim of this study was to investigate Patient's experiences and compliance in the use of this device. **Method:** We retrospectively reviewed a single surgeon series of 64 patients who underwent forefoot surgery and subsequently was rehabilitated with early mobilisation using the heel weight-bearing shoe. Data on patient age, arthritic co-morbidities, adaptation to device and symptoms during use were collected via a standardised postal questionnaire. **Results:** 39 patients complied with the use of the reverse camber shoe for 8 weeks while 11 patients managed it for less than 6 weeks. 14 patients used the shoe for more than 6 weeks but less than 8 weeks. Patients were younger in group A compared to the others (52.6 vs 68.1 yes, $p<0.0001$). Incidence of pre-existing hip, knee osteoarthritis and back pain was lowest in group A. There was no difference with respect to these between groups B and C. Patient adaptation during use of the device was lowest in group B compared to Group C ($p<0.05$). **Conclusion:** Elderly patients with pre existing arthritis can have poor compliance whilst in these shoes.

Abstract no.: 29346

RADIOLOGICAL ASSESSMENT OF CONSERVATIVELY CORRECTED CLUBFEET: LATERAL HINDFOOT ANGLES BECAME NORMAL BY THE AGE OF 18 YEARS WITHOUT ANY SURGICAL TREATMENT

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Purpose: To evaluate lateral talocalcaneal and tibiocalcaneal angles after conservative treatment in patients at the age of 1 year up to the age of 18. Materials & Method: This study reviews 11 patients with 17 stiff-soft or stiff-stiff clubfeet. All patients were treated in 1991-1992 using knee-flexed cast applications with progressive external foot rotation. Treatment was initiated at an average of 9 days. All feet were corrected with an average of 5.8 casts without Achilles tenotomy. Abduction splints were then applied until the walking age. There were 3 recurrences, number of casts required for correction. All patients were evaluated clinically and by radiographs at the age of 1 year up to 18. Results: All patients at the age of 1 year had good clinical data (feet with possibility of dorsiflexion, no heel varus, no internal foot rotation in relation to the knee), but their lateral X-rays showed abnormal values of talocalcaneal and tibiocalcaneal angles. The lateral talocalcaneal angles ranged from 3 to 8 degrees (mean 5,3), the lateral tibiocalcaneal angles ranged from 82 to 88 degrees (mean 84,8). The final X-ray evaluation at the age of 18 years showed normal values of both lateral angles. The lateral talocalcaneal angles ranged from 26 to 32 degrees (mean 29,2), the lateral tibiocalcaneal angles ranged from 60 to 78 degrees (mean 68,4). Conclusions: Abnormal values of lateral talocalcaneal and tibiocalcaneal angles at the age of 1 year are not indication for surgery if the corrected foot is clinically normal.

Abstract no.: 29348

LUMBAR SPINAL STENOSIS (LSS) TREATED WITH OUTPATIENT MINIMALLY INVASIVE SURGERY OF “MILD” AND TRANSFORAMINAL ENDOSCOPIC DISCECTOMY/FORAMINOPLASTY

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Introduction – Purpose: Symptomatic neurogenic claudication due to lumbar spinal stenosis is a common complaints caused by hypertrophic ligamentum flavum, facet hypertrophy and degenerative lumbar disc herniation. When conservative treatment with analgesics, physical therapy, and epidural steroid injections fail, patient is unwilling and unable to be treated with more invasive open spinal surgery, and now can be successfully treated with outpatient “MILD” (minimally invasive lumbar decompression of hypertrophic ligamentum flavum) procedure, combined with transforaminal endoscopic discectomy/foraminoplasty. **Materials and Methods:** Patients suffering from neurogenic claudication with or without radiculopathy, treated with dorsal approach MILD procedure, under fluoroscopy, combined with transforaminal endoscopic discectomy/foraminoplasty as an outpatient. The surgical step by step techniques and instruments are described and illustrated in detail. **Results:** No major procedure or device related complications. Outcome assessment with Visual Analog Score (VAS), Oswestry Disability Index (ODI), Patient Satisfactory Score, Pain Diagram and others demonstrates significant symptomatic and functional improvement. **Conclusion:** “MILD” (minimally invasive lumbar decompression of hypertrophic ligamentum flavum) procedure, combined with transforaminal endoscopic discectomy/foraminoplasty is a safe and efficacious outpatient surgical treatment for advanced lumbar spinal stenosis associated with hypertrophic ligamentum flavum, facet hypertrophy and degenerative lumbar disc herniation.

Abstract no.: 29350

OUTCOME OF UNSTABLE ANKLE FRACTURES TREATMENT IN PATIENTS AGED 70 YEARS AND ABOVE IN BOTH MALES AND FEMALES

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We retrospectively reviewed the outcome of in-patient treatment of unstable ankle fractures in patients aged 70 years and above between January 2006 and April 2010 and compared the results between males and females. Seventy patients have been identified with a mean age of 77.7 years and 80% being females. Twenty patients have been treated conservatively and 80 patients surgically. Supination-external rotation was the main type of injury in both groups. Males treated conservatively stayed approximately one week longer than females of the same group while there was no difference in length of stay in patients treated surgically. Failure rate was 10% in the conservative group and 4% in the surgically treated group. 50 % of failures were Supination-Adduction type of injury. All of the failures in the surgical group were in females whereas the rate was split between males and females in the conservative group. Our results are comparable to published literature. Special attention should be given to Supination-Adduction injuries especially in females aged 70 years and above.

Abstract no.: 29351

RARE CASE OF AN OPEN BICONDYLAR HOFFA FRACTURE WITH EXTENSOR MECHANISM DISRUPTION

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Objectives: The incidence of Open Bicondylar Hoffa fractures is extremely rare. Unicondylar fracture must be viewed with a high index of suspicion so as to not miss a bicondylar component. **Methods:** A 42 year old woman who presented to the emergency with an open injury over the knee. Imaging revealed Bicondylar Hoffa fracture. Patient was taken up for debridement and internal fixation. Intraoperative findings included an entrapped patella between the fracture fragments and extensor mechanism disruption. Hoffas fracture was fixed with lag screws and patellar tendon repaired on to the inferior patella. Patient was started on early postoperative range of motion exercises. **Result:** The fracture united at 12 weeks with 0-120 degree of knee flexion at 2 year followup. **Conclusion:** Open Bicondylar Hoffa fracture is a rare entity. Open reduction and internal fixation in all cases combined with early functional rehabilitation provides the best chances for good long term functional outcome.

Abstract no.: 29352

ANALYSIS OF RESULTS IN UNSTABLE COMMINUTED DISTAL RADIUS FRACTURES WITH EXTERNAL FIXATION AND BONE GRAFTING -A LONG TERM FOLLOWUP STUDY

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Over the years, management of complex distal radius fractures by closed means has often failed leading to late collapse. We have chosen the principle of ligamentotaxis using external fixation and bone grafting in this study to prevent late complications. Eighty one patients with complex distal radius fractures belonging to Type IV A, IV B, IV C of Universal classification were treated with an AO external fixator between 1995 and 2001. Mean age group was 38.47 years with longest follow up of 7 years. Bone grafting was done primarily in 20 patients and early grafting (within 3 weeks) in 5 patients. Statistically significant differences were observed between the two groups (with or without bone grafting) with respect to postoperative values of (radial length, radial tilt and volar tilt). Results were assessed based on Sarmientos criteria. 56 patients had excellent results, 9 had good results and 16 had poor results. Late collapse with decreased radial length was observed in 18 patients who did not undergo bone grafting. Mean grip strength was 63 percent. Osteoarthritic changes were noted in 20 patients. We conclude that accurate anatomic reduction is necessary for achieving good to excellent functional and cosmetic results. Bone grafting is the mainstay of treatment in comminuted distal radius fractures along with fracture stabilisation. **Keywords:** comminuted, distal radius fracture, external fixation, bone graft.

Abstract no.: 29354

**EVALUATING A TODDLER WITH MULTIPLE FRACTURES IN ONE LIMB-
A CASE REPORT**

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Background: The presentation of multiple fractures in a child can be attributed to various etiologies. Although trauma is the antecedent cause in an acute setting, others such as child abuse and fractures in pathological bone need to be considered.

Materials and Methods: A two year toddler presented with multiple long bone fractures with a suspicious history of trauma. Examination revealed a grossly swollen and deformed upper limb. Due to the reluctance of parents for operative intervention, all fractures were treated non-operatively.

Results: Clinico-radiological union was obtained at 5 weeks with full range of motion at all joints.

Conclusion: This kind of fracture pattern involving a single limb in a toddler is unreported in literature. The differential diagnoses to be kept in mind during diagnostic workup in cases of multiple long bone fractures in a child are discussed.

Keywords Multiple fractures, toddler, single limb.

Abstract no.: 29355

**EFFICACY AND SAFETY OF ANTERIOR INSTRUMENTATION IN
TUBERCULAR SPINE AS SINGLE STAGE SURGERY**

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Background: Anterior Spinal instrumentation with autogenous bone grafting may be used in tuberculosis of spine for prevention and correction of deformity as single stage surgery.

Methods: Total seventy six patient has been operated for tubercular spine either as Anterolateral decompression or anterior approach. Only thirty eight patients of tubercular spine underwent surgery with anterior spinal instrumentation in the last 3 years. Out of these patients, 25 cases have completed a minimum follow-up of 30 months. The regional distribution was 1 in craniocervical junction, 3 in subaxial cervical spine, 9 in cervicothoracic junction, 9 in thoracic region, 10 in the thoracolumbar junction and 3 in the lumbar region and 1 in the lumbosacral junction. All the cases had anterior lesions except one, which had both anterior and posterior lesions. All of them had decompression, debridement of the lesion, bone grafting and instrumentation. Indication of surgery was tubercular spine with neurodeficit and /or osseous destruction with deformity, which was not responding to conservative treatment of three weeks. **Results:** Results were analyzed as clinical and radiological outcome. The clinical evaluation included recovery of pain and neural deficit. The radiological evaluation included correction of deformity and evidence of fusion. Complications included one case of implant failure and one case of transient neurological deterioration. Results were excellent in 20, good in 5, fair in one and poor in one patient. **Conclusions:** anterior debridement, bone grafting with instrumentation is viable single stage surgical option because of its safety and efficacy in achieving deformity correction and fusion.

Abstract no.: 29356

**PREVALENCE OF POSITIVE ANTI CYCLIC CITRULLINATED PROTEINS
AND RHEUMATOID FACTOR DURING ACTIVE SYNOVITIS**

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Objectives: To determine the prevalence of anti cyclic citrullinated proteins (anti CCP) and IgM rheumatoid factor (RF) in sera of patients with knee synovitis compared with healthy controls. **Patients and methods:** 47 consecutive patients with knee synovitis and 29 healthy controls were studied. Data were collected by clinical features of the disease, duration of symptoms, fever, cough, arthralgia, myalgia, symptoms. Serum samples were collected from patients before starting treatment for synovitis. **Results:** The mean (SD) duration of symptoms was 15 days, 73% had knee pain, 70% fever and 84% a cough. Mean (SD) levels of antiCCP were significantly increased in 25 patients with synovitis compared with controls. Serum levels >40 U were found in 15/47 (32%) patients compared with 1/29 controls ($p=0.002$). Mean (SD) serum levels of IgM RF were significantly increased in patients with synovitis: 17.8 (19) v 4.3 (5) ($p<0.0001$). IgM RF was positive (>6 IU) in 30/47 (65%) patients v 2/29 controls ($p<0.0001$). **Conclusions:** A significant proportion of patients with active synovitis have an increased titre of antiCCP and IgM RF who were proven to be tubercular as histology. It shows high false positive value for anti CCP antibody in tubercular endemic areas.

Abstract no.: 29357

HOOK PLATE FIXATION OF NEER TYPE 2 FRACTURES OF THE DISTAL CLAVICLE

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Introduction: Neer 2 fractures of the distal clavicle are notorious for their high rates of non-union and numerous methods of fixation are recommended. Here we present results a method of fixation of these fractures with a hook plate. **Method:** Five patients with Neer type 2 fractures of the distal clavicle were treated between 2009 and 2010. All had open reduction and internal fixation with an AO/ASIF Hook Plate. In all cases the coracoclavicular ligaments were not repaired, and the plates were removed once the fractures had united usually between 3 to 4 months. **Results:** All fractures united at between 6 and 12 weeks. All patients had a good functional result, with an excellent to good Oxford Shoulder score. **Conclusion:** Hook Plate fixation can be done with minimal dissection and easily available implant and good fracture healing. No cases of subacromial impingement or refracture occurred. The excellent results prohibit the necessity to repair the coracoclavicular ligaments.

Abstract no.: 29360

**ANALYSIS OF OUTCOME OF INTERCONDYLAR FRACTURE FEMUR
TREATED BY DISTAL FEMORAL LOCKING PLATE**

Sunil Gurpur KINI

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26 Intercondylar fractures of the femur were operated and followed up between 2007 and 2010. Of them 21 were men and 5 women. The mean age was 29 years. 15 of them involved to right and 11 of them the left side. 23 of them were due to road traffic accidents. 20 were closed and 6 of them open fractures. 3 of them were classified as Gustillo Anderson Grade I, 2 Grade II and 1 of them was Grade III A. All cases were subjected to open reduction and internal fixation using Distal femoral locking plate. 25 of 26 cases united with mean average of 12.3 weeks. 1 patient went for gap nonunion subsequently treated by Ilizarov. Mean range of motion was 0-112 degrees. According to the Schatzker outcome scoring 12 had excellent, 8 good, 4 fair and 2 poor results in our study. We had our share of complications, mainly being malunion, knee stiffness and infection. Locked implants are typically indicated in patients with osteoporosis, fractures with metaphyseal comminution where the medial cortex cannot be restored, or a short articular segment.

Abstract no.: 29362

SURGICAL FIXATION WITH RECONSTRUCTION PLATE FOR NON-UNION OF THE MID-SHAFT CLAVICLE: A LONG-TERM RESULT ANALYSIS

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We evaluated the effect of AO reconstruction plate in the open reduction and internal fixation for nonunions of the midshaft clavicles. This was a retrospective study of such cases where the main surgical strategy was open reduction and internal fixation with AO reconstruction plates. From January 1998 to January 2005, 21 patients with symptomatic nonunions of the midshaft clavicles were collected. Seventeen non-unions were atrophic and four were hypertrophic. Nineteen patients were initially treated conservatively with a figure-of-eight bandage, and two patients underwent primary cerclage wire fixation. The follow-up period was 65.7 (24-108) months. All the nonunions united well with the union time of 13.6(11-27) weeks. At last follow-up, the overall Constant and Murley score showed an average of 91(61-100), with 14 (66.7%) patients between 90 and 100, five (23.8%) between 75 and 89, and two (9.5%) between 60 and 74. All patients were satisfied with their surgical results. In conclusion, open reduction and internal fixation with AO reconstruction plate is very useful and effective in the treatment of nonunions of the midshaft clavicle.

Abstract no.: 29365

BENIGN CYSTIC TUMOROUS LESIONS OF THE BONE: EXTENDED CURETTAGE USING SIMPLE ELECTRIC CAUTERY

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Introduction: Extended curettage is the method to treat the grade-I and II osseous neoplastic lesions. Giant Cell tumor, simple bone cyst and aneurysmal bone cysts are common surgically treated lesions. The purpose of this paper is to highlight the use of electric cautery to extend the curettage to treat these benign lesions. **Material and methods:** 48 lesions (GCT, Simple bone cysts and Aneurysmal bone cysts and others) have been treated by the extended curettage. This entails the making of very large window and curetting the lesion by sharp straight and angled curets and using the high speed burrs and pulsed lavage; electric cauterization on spray mode of the wall of the lesion was to kill the microscopic disease and filling the cavity with or without bone-grafts. In 10 lesions in children only extended curettage was done without bone grafts. **Results:** We achieved good to excellent results in 45 patients. There were only three recurrences so far at a follow up of more than 2 years. **Conclusion:** Extended curettage using the cautery on spray mode is simple and cost effective method. This can be done by all orthopedic surgeons as this simple equipment is available in all operation theatres. The results in view of the recurrence depend on the quality of the curettage performed.

Abstract no.: 29366

OPEN WEDGE HIGH TIBIAL OSTEOTOMY FOR OSTEOARTHRITIS KNEE: USING A NOVAL FIXATOR

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Introduction: High tibial osteotomy is an accepted procedure to correct the varus deformity of knees, restore the mechanical axis, reduce pain and delay the need for arthroplasty.

Material and methods: We conducted study in radiologically established 50 knees of patients with primary unicompartmental osteoarthritis of knee and studied long term results of medial open wedge high tibial osteotomy, with special reference to patient satisfaction and functional assessment. Osteotomy was performed 2 cm distal to the articular surface of the tibia above the tibial tuberosity. Fixation and gradual distraction of the osteotomy was done using a locally fabricated low cost T-shaped fixator. The median time to fixation was 79 (range 63–125) days. Hip-knee-ankle angle was on radiographs of the whole limb with the patient bearing weight.

Results: The excellent results were obtained in the forty knees that had a hip-knee-ankle angle of 183 to 186 degrees, signifying that exact postoperative alignment is the prerequisite. Six had good to fair and four poor results. Complications included two pin tract infections, two hematomas and one implant failure. Two patients felt pain for prolonged duration during post operative follow up, but the procedure could be continued.

Conclusion: We observed that the procedure is quite acceptable to our patients in whom the primary concerns of cost and squatting habits are well taken care of. Results do deteriorate with time but most patients consider the surgery satisfactory. Subsequent arthroplasty is easier if compared to the lateral closing wedge osteotomy.

Abstract no.: 29368

EARLY TENDON TRANSFER IN ULNAR CLAW HAND

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Ulnar claw hand causes a significant disability due to loss of grip and proper grip sequence, apart from the awkward claw deformity. There is also sensory loss along the ulnar aspect of the hand. The basic approach to such injuries has been nerve repair which however takes time to show results. Moreover, the recovery in high lesions may be delayed or poor. External splintage to prevent deformity is cumbersome and compliance is poor. Selected early tendon transfers act as internal splints and enhance function while awaiting recovery. They also allow the patient to be splint free and prevent/correct the claw deformity. The study was conducted in the Department of Orthopaedics, Maulana azad Medical College. Ten cases of ulnar nerve injuries of different etiology were selected. Pre- and post operative analysis was done by measuring grip-strength, PIP joint angle measurements, photographs in standard positions, patient satisfaction. Internal splintage was done using palmar aponeurosis to A1 pulleys. Significant improvement in clawing, grip strength was noted. 70% patients were satisfied with the procedure in terms of deformity correction and improvement in grip. Early tendon transfers thus work as a substitute during regrowth of the nerve, as a helper following reinnervation and as a substitute where the results of neurorrhaphy are poor or in cases where the lesion is irreparable.

Abstract no.: 29371

OUR EXPERIENCE OF OPERATIVE TREATMENT OF SCOLIOSIS

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In Togliatti since 1988 we have performed 1325 operations to 732 patients with scoliosis. At first we used Harrington's method. Since the 1990s we also put into practice the S-shaped distractor "Progress" with 2-side threaded draws, sometimes – shape-memorizing implants from alloy of nickel and titanium. The use of dynamic endocorrectors of spring and hydraulic types allowed the reduction of the number of periodical corrections of scoliosis in process of child's growth. The maximum correction of hard scoliotic deformation has been achieved with the help of Danilov-Scvortsov device of external correction of scoliosis. Gradual correction within 4 – 5 weeks allowed the avoidance of neurological complications. After the removal of deformation we installed the endocorrector and performed the posterior and anterior spondylosyndesis with allogenic bones and autotransplants. In some cases we used resection of rib gibbus and elevative thoracoplasty. Since 2002 we began to employ two-plate endocorrectors according to Krasnoyarsk method. In 2009 we began to use multi-level three-dimension endocorrection with Cotrel-Dubousset instrumentation and with preliminary anterior release.

Abstract no.: 29374

**SALVAGE OF THE LOWER LIMB FOLLOWING A FULL THICKNESS
 BURN WITH LOSS OF THE KNEE EXTENSOR MECHANISM**

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 Gibbons CHARLES, Jones ISABEL

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Full thickness burns around the knee can involve the extensor mechanism. We present the case of a 79 year old lady who suffered a 3% contact burn of sufficient severity to result in loss of the extensor mechanism and consequently, effective function of the knee joint. A Wichita Fusion Nail® knee arthrodesis, combined with a medial gastrocnemius muscle flap was used to salvage the knee and preserve the lower leg. While use of the gastrocnemius flap in knee burns has been described before we believe this is the first time that this combination of techniques, namely knee arthrodesis with soft tissue reconstruction using a gastrocnemius flap, has been reported. Combining these procedures with a multidisciplinary approach should lead to limb salvage and avoid the need for an above knee amputation. This provides a useful alternative to above knee amputation when extensor reconstruction is not possible.

Abstract no.: 29387

KNOWLEDGE OF NIGERIAN DOCTORS REGARDING RADIATION DOSES DURING COMMON RADIOLOGICAL EXAMINATIONS

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Background: Radiation is widely used in diagnosis and treatment especially in surgery and trauma despite proven dose-related adverse biological effects. Hundreds of unnecessary examinations are performed yearly due to insufficient knowledge of doctors about radiation safety. We investigated the level of knowledge of Nigerian doctors concerning patient radiation doses during common radiological examinations. **Methodology:** A questionnaire about radiation doses of routine radiological diagnostic procedures was administered to doctors in our hospital. Respondents compared doses for common radiological examinations with a chest X-ray (regarded as one unit). **Results:** 217 questionnaires (72.3%) were completed. There were 144 (66.4%) males. Seventy two (33.2%) had received formal training in ionizing radiation. The mean score obtained was 3.7 of 21 marks (17.6%). Only 33 doctors (15.2%) correctly identified the dose of a chest radiograph while 31 (14.3%) correctly related the dose of a chest radiograph to the annual dose received from background radiation. Ultrasound and magnetic resonance imaging examinations were wrongly regarded as using ionizing radiation by 109 (50.2%) and 128 (59%) respondents respectively. Formal training did not significantly affect the level of radiation knowledge ($X^2=1.061$; $p=0.588$). **Conclusion:** Nigerian doctors are unaware of the radiation dose patients are exposed to during radiological examinations. Radiologists require improved training in radiation protection to be able to advise other clinicians appropriately. The incorporation and emphasis on radiation protection and safety education in medical schools and post graduate curricula should help in correcting this undesirable knowledge gap.

Abstract no.: 29389

**FACTORS ASSOCIATED WITH LOW BACK PAIN AND LUMBAR
INTERVERTEBRAL DISC DEGENERATION IN CHINESE**

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A survey was done on the clinic patients who complained about low back pain. Each patient completed a questionnaire concerning basic data, history of low back pain (LBP), duration of LBP, certain occupational characteristics, height, body weight, smoking and drinking habits, diabetes mellitus, high blood pressure, and so on. The severity of LBP was measured by VAS score. Odds ratios (OR) and 95% confidence intervals (CI) for the associations of each factor with LBP/IVDD were calculated using logistic regression. Results: There were 254 patients fully completed questionnaires. Occupation exposed to vibration (driver or railway staff) prolonged sitting, overweight, prone to low back pain were no significant difference ($p>0.05$). Physical activity, heavy physical work long time driving or travelling (OR=8.666, 95%CI(2.498, 30.062), $p=0.004$), heavy smoking (OR=2.650, 95%CI(1.705, 4.118), $p=0.003$) are the were associated with LBP. Aging correlated significantly with IVDD (OR=1.248, 95%CI(0.807, 1.890), $p=0.001$), overweight (OR=1.638, 95%CI(0.575, 4.668), $p=0.028$), heavy smoking (OR=2.75, 95%CI(1.67, 4.651), $p=0.010$) were associated with IVDD. Conclusion: Physical activity especially the heavy physical work, heavy smoking, long time drive or travel were associated with LBP. Overweight, heavy smoking was associated with IVDD. Their common risk factor is heavy smoking.

Abstract no.: 29390

**INTERPRETATION OF FOOT AND ANKLE RADIOGRAPHS BY
EMERGENCY ROOM AND ORTHOPAEDIC CLINICIANS**

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The aim of this study is to assess the ability of clinicians dealing with foot and ankle trauma to interpret plain radiographs of the foot and ankle in standard views. A survey of 47 clinicians was conducted between November and December 2010. Clinicians were recruited from the Emergency Room (ER) and Trauma & Orthopaedic departments at a University Teaching Hospital in the UK. Participants included junior residents and residents from the ER and Orthopaedic junior residents and residents. Orthopaedic interns were also included to establish baseline knowledge of doctors fresh from medical school. Participants were supervised identifying 12 standard landmarks on four images of normal foot and ankle radiographs. Participants were awarded one mark for each correctly identified structure (maximum of 12). Nineteen ER and 28 Orthopaedic clinicians were recruited in the study. The mean number of correctly identified structures for ER clinicians was 9.6. The mean for the Orthopaedic group was 10.6. The mean for junior residents in the ER was 8.4. Doctors in the ER scored lower than Orthopaedic trainees. Junior residents in the ER correctly identified only seventy per cent of the structures assessed in this study. Overall, Orthopaedic trainees scored higher. Failure to recognise these landmarks may give rise to problems regarding the identification of fractures and dislocations. It is the authors' opinion that there is a deficiency in the knowledge and application of radiographic anatomy across both Emergency clinicians and Orthopaedic trainees. This is particularly evident in junior residents in the ER.

Abstract no.: 29392

IMPROVED DISCHARGE TIMES AFTER TOTAL HIP AND KNEE ARTHROPLASTY

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Background: In 2010 71,851 primary total-hip replacements (THR) and 77,556 primary total-knee replacements (TKR) were performed in the UK. With our ageing population this figure is set to rise. The cost and healthcare provision implications of this are huge. We have recently implemented steps in our unit to reduce length of stay (LOS) following THR and TKR. We then closed the loop on a previous audit to determine their effectiveness.

Methods: Between October and November 2010 we collected data from 50 patients who underwent primary THR and TKR surgery including information on the revised policies for drain-use, urinary-catheter insertion, analgesia, transfusion requirements, post-operative radiology, physiotherapy and causes for delayed discharge. **Results:** The mean age of the patients was 69.8 years. 52% were female. 54% of patients underwent TKR. All of the patients were admitted on the day of surgery. The mean LOS was 4.62 days (Range 3-10 days) for both groups. The mean LOS for THR was 4.81 days and for TKR 4.39 days.

Previous figures from our unit in 2007 showed a LOS of 8.9 days and the national-average from the National-Joint-Registry 2009 Report showed an average of 6.75 days.

Discussion: The LOS in our unit has significantly decreased since 2007 and is now significantly lower than the National-average. We have implemented targeted-interventions to reduce the LOS of our THR and TKR patients in the pre-intra- and post-operative phases of their pathway. These interventions have significantly decreased our LOS.

Abstract no.: 29404

**NEGLECTED BILATERAL TRAUMATIC ANTERIOR FRACTURE
DISLOCATION OF THE SHOULDER: A CASE REPORT**

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Introduction: Proximal humeral fractures usually heal with conservative, early functional therapy; however, displaced and unstable proximal humeral fractures represent a surgical challenge. The principle of treatment is the exact anatomical reduction of individual parts, with maximum stability and maintaining the vitality of the humeral head. **Case Report:** We present a case report of 43 years old male having schizophrenia with history of third person hallucinations, with someone calling him up on the roof. Patient reported at 5 weeks post injury, for 4 weeks he was being treated by a bonesetter by massage. He came to our centre with bilateral anterior dislocation of the shoulders with displaced Neer's three part fracture of the proximal humerus on right side and a four part fracture on the left side. The patient was treated by delto- pectoral approach using PHILOS (proximal humerus internal locking system) plate bilaterally. The follow up at 1 year showed a reasonably good range of movements.

Abstract no.: 29406

FRACTURES OF PROXIMAL HUMERUS: AVAILABLE OPTIONS

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Introduction: With increasing road traffic accidents and life expectancy, fractures of proximal humerus have increased in frequency with female pre dominance in older age groups. Approximately 85% of proximal humeral fractures are nondisplaced by Neer's criteria and can be treated nonoperatively. The remaining 15% of proximal humeral fractures require careful decision making. Beyond 40 years the increase in incidence is mostly attributed to two major factors, one is deterioration in age-adjusted bone quality caused by decreased mineral density and bone strength and secondly the older persons fall more often and more seriously than before. **Study:** The prospective study was undertaken to assess type of treatment options for various proximal humerus fracture patterns and thereby select ideal time for rehabilitation programme. The study also included how to give maximum benefit from the treatment offered for a specific type of fracture. Sixty patients treated operatively and followed up. Average follow up was 2.5 years. **Results:** Radiographs were assessed for fracture healing, loss of reduction, and implant failure. The patients were functionally assessed with Neer's point system. No fracture showed X-ray evidence of fracture malalignment. Out of 28 cases treated with cannulated cancellous screw 77% had good to excellent results. Eight cases of plating had good to excellent results. Half (50%) cases treated with K-wires had poor results. **Conclusion:** For early mobilization, stability of the fracture should be good with the modality of treatment used.

Abstract no.: 29408

BILATERAL SEPTIC CARPAL TUNNEL SYNDROME

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Carpal tunnel syndrome is the most common entrapment neuropathy it is a condition commonly encountered in clinical practice. It is usually a chronic condition, which is treated on an elective basis. In a few cases carpal tunnel syndrome can present acutely. There are a number of etiologies behind this including trauma, iatrogenic and sepsis. Septic carpal tunnel syndrome is rare cause of acute carpal syndrome. We present a case of a forty year labourer with no significant past medical history. He presented on two occasions with acute onset symptoms of median nerve compression with symptoms and signs of local and systemic sepsis. When he was taken to theatre on both occasions there was pus in the carpal tunnel syndrome with no signs of infection in the hand. He made a full recovery following the treatment he received. We explore the etiology of septic carpal tunnel syndrome and remind ourselves of sepsis as a cause of acute carpal tunnel syndrome. We consider the microbiology, investigation and management strategy to be employed when facing this uncommon condition.

Abstract no.: 29410

EPONYMOUS RADIAL AND ULNAR INJURIES: WHO NAMED IT?

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An eponym is a term derived from the name of a real or fictional character. We use many of them in our everyday lives. For example Morphine is derived from the name Morpheus the Greek god of dreams or Rolls Royce taken from its manufacturers names Charles Stewart Rolls and Sir Frederick Henry Royce. In our work as upper limb surgeons we encounter many different eponymous injuries, signs and conditions. These are most commonly derived from the names of the famous surgeons of the time who first discovered and described the condition. It is important for surgeons to be able to accurately describe an injury rather than correctly or incorrectly use an eponymous name for it but they stay with us. We take this opportunity to reflect on the exact description of the condition originally. This will include the work of Colles, Barton, Galeazzi and Monteggia. In addition we examine the legacy of some famous surgeons who have given us the names we use every day for common injuries, but we may not give any thought to where these names originated from and the person behind the name.

Abstract no.: 29417

THE COMPARISON OF VARIABLE LOCKING PLATE WITH STANDARD TUBULAR PLATE FOR WEBER B FRACTURES OF THE LATERAL MALLEOLUS

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INTRODUCTION: We present a study where we retrospectively compared the standard AO one-third tubular plate (Group A) with the Variable locking lateral malleolar plate (Group B) for unstable Weber B ankle fractures **MATERIALS AND METHODS:** A retrospective review of the case notes, radiographs and physiotherapy notes was performed of all the unstable Weber B ankle fractures treated operatively in our department over a period of 18 months since November 2008. **RESULTS:** Both the groups were statistically similar with the mean patient age in Group A being 53.8 years and that of Group B being 52.9 years. Of the 20 patients in Group A there were 13 females and 7 males. Amongst the 18 group B patients there were 12 females and 6 males. The mean follow-up period was 3.6 months (Gr A) and 4.2 months (Gr B). The average number of screws in the distal fragment was 2 in Group A and 3.25 screws in Group B. Clinical and radiological union and duration in plaster were similar in both groups. There was no statistical difference in the wound complications in the 2 groups **CONCLUSION:** The mainstay of fixation of unstable Weber B ankle fracture is the use of an interfragmentary compression screw with a neutralization plate. We found that the use of the variable locking lateral malleolar plate give chance to obtain at least 3 locking screws in the small osteoporotic distal fragment, which is rarely achievable using the one-third tubular plate.

Abstract no.: 29421

DORSAL PI PLATING FOR COMMINUTED DISTAL RADIUS FRACTURES

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Introduction: The purpose of this study was to assess the functional outcome and complications following dorsal plating with a Synthes pi plate, for the treatment of dorsally displaced, unstable, intra-articular distal radial fractures. **Materials and Methods:** 20 patients underwent open reduction and internal fixation of comminuted dorsally displaced fracture of the distal radius with a Synthes Pi plate, performed between 1999 and 2003 at our institution. 2 patients had died during this time interval. The study group comprised 12 women and 6 men with a mean age of 52 years (range 21-75) **Results:** Satisfactory reduction was achieved for all 18 fractures at the time of operative fixation. One patient developed chronic regional pain syndrome type 1 and later required extensor tenolysis at 17 months post-op with good effect. Another patient had removal of plate at 29 months post-operatively due to intractable pain. A third patient had a tenolysis and plate removal at 4 months; at 8 months his extension remained limited at 35 degrees although function was good. **Discussion:** When using the dorsal approach, surgical technique is paramount and care must be taken to preserve and use the extensor retinaculum to protect the tendons from the plate; this then results in acceptable function. Our experience has been that internal fixation with pi plate for dorsally displaced unstable fractures of the distal radius is an effective technique with excellent pain and functional outcomes but with slight restriction of wrist extension.

Abstract no.: 29423

COMPLETE WEAR OF THE FEMORAL TAPER FOLLOWING CERAMIC FEMORAL HEAD FRACTURE

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One of the main drawbacks of the alumina ceramic femoral head is the risk of fracture. This complication can be disastrous with the risk of requiring several further revisions. Prompt recognition and intervention in this rare event is needed in order to improve the chances of a favorable outcome from surgery. We describe an unusual complication of complete wear of the femoral taper due to delay in intervention after a ceramic head fracture. This resulted in a complex revision of the well fixed femoral stem rather than a simpler procedure of change of femoral head only.

Abstract no.: 29425

**BONE GRAFT HARVEST SITES OPTIONS IN ORTHOPAEDIC TRAUMA:
A PROSPECTIVE IN VIVO QUANTIFICATION ANALYSIS**

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Background: Autologous bone graft is the gold standard. Our paper focuses on comparing the volume of three different harvest sites and the associated pain levels according to the VAS scale at 1 and 4 weeks post harvest. **Method:** We prospectively collected a total of 47 consecutive autologous bone grafts in our level I trauma centre between July 2010 and September 2010. Twelve were harvested from the anterior iliac crest, 19 from the olecranon and 16 from the lateral aspect of the proximal tibia. **Results:** The three groups were comparable for age and sex. The mean quantity of bone graft harvested were 6.1 cubic centimeters (cc) from the anterior iliac crest, 5.6 cc from the olecranon and 7.2cc from the proximal tibia with a statistical superior quantity in the proximal tibia group when compared to the olecranon group and no difference between the other groups. The analysis of the visual analogue scale at one week and 4 weeks post harvest confirmed that the pain was graded as significantly more severe in the iliac crest group than the 2 other groups at both 1 week and 4 weeks post harvest. There were no infections or neurovascular complications noted at 1 and 4 weeks following the harvest. **Conclusion:** The iliac crest harvest site was associated with significantly more pain at 1 and 4 weeks than the olecranon or the proximal tibia sites and the volume harvested was not significantly larger than these latter 2 sites.

Abstract no.: 29426

LONG-TERM WEAR EVALUATION OF A POLYCARBONATE-URETHANE CUSHION FORM BEARING IN ARTIFICIAL HIP JOINTS

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There is growing interest in the use of compliant materials as an alternative to hard bearing materials in artificial joints. Polycarbonate-urethane (PCU), for example, is a promising candidate material for hip arthroplasty in terms of its mechanical and frictional properties, which are similar to cartilage. The current study aimed to elucidate whether a novel cushion PCU acetabular bearing can be adequately durable to withstand long-term use, by simulating 20 million gait cycles (20Mc). Wear was examined every 1Mc by gravimetric measurements and by wear debris isolation methods (filtration and bio-ferrography). Additional implant characterization was conducted by environmental-SEM, laser-profilometry, and atomic force microscopy (AFM) of the articulating surface. Current findings demonstrate excellent fatigue and wear resistance of the PCU bearing. Microscopic analysis of the implants after the simulation didn't indicate on the onset of fatigue damage, e.g. cracking or delamination, which typically occurs following long-term loading of hard bearing materials. The PCU bearing showed excellent wear characteristics in terms of its low and steady volumetric wear rate (5.8–7.7 cubic mm/Mc) and low particle generation rate (2–3 million particles/Mc). The latter is 5–6 orders of magnitude lower than that of highly cross-linked polyethylene, and 6–8 orders of magnitude lower than that of metal-on-metal bearings. The finding of a lower particle generation rate combined with larger average particle sizes, suggests that the osteolytic potential of PCU is lower than these materials. Thus, the compliant PCU bearing offers a substantial advantage over traditional bearing materials.

Abstract no.: 29428

KINEMATICS OF THE KNEE JOINT: ELECTIVE AXIAL ROTATION

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This observational study sought to clarify femoro-tibial relationships during the elective axial rotation of the knee. Two forms of axial rotation are described for the knee. Obligatory rotation accompanied knee flexion and is responsible for the 'screw home' phenomenon. Elective rotation by contrast is caused by muscle action or by application of external load and because of its increased mobility, the lateral condyle supposedly moves forwards with external rotation and backwards with internal rotation. Plain lateral radiographs of a normal right knee were obtained with the subject seated, with the knee at 90 degrees of flexion and with the lateral side of the knee placed against the film cassette. Radiographs were obtained in three positions of the foot: internal rotation, neutral rotation and external rotation. Thereafter, the apposing joint surfaces were traced on the images. Findings for neutral and internal rotation were identical. In neutral and internal rotation, both condyles rested on the tibia. In external rotation, only the medial condyle rested on the tibia. The lateral condyle was subluxed upwards and the femur was externally tilted. This study reveals that during the elective rotation, the femur neither rotates nor slides forwards or backwards. Instead, the lateral condyle is lifted off the surface of the tibia and the knee pushed into valgus as a result of the 'wedge effect' of the tibial spine. It is the tibial spine and not the shape or size of the condyles that determined femoro-tibial relationships during elective axial rotation.

Abstract no.: 29429

KINEMATICS OF THE KNEE JOINT: THE CRUCIATE GEOMETRY

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The purpose of this study was to re-evaluate the cruciate geometry. The four-bar linkage is currently the geometry with widespread support but it is anatomically improbable. The femoral attachments of the cruciates are located in the coronal plane whilst the tibial attachments are located in the sagittal plane. The ligaments do not cross in the line of motion. Sagittal MR images of knees with intact cruciate ligaments were obtained from the Spire Leicester Hospital. The images were viewed on a dedicated workstation and the longitudinal axes of the ligaments were traced out. There was a 'kink' in each ligament at the point where they crossed. The ACL sloped upwards and backwards from its tibial attachment. At the crossing, it subtly changed direction and oriented slightly anteriorly. The PCL sloped upwards and forwards from its tibial attachment. At the crossing, it abruptly changed direction and oriented downwards almost perpendicularly to the original orientation. The ligament axes formed a crossed quadrilateral geometry comprising of two triangles: distally based tibial triangle and proximally based femoral triangle. This study reveals that at the cruciate crossing, the orientation of the cruciate ligament is altered significantly. The ligaments are arranged into a two-planar geometry which presumably enables them to act in both sagittal and coronal directions particularly important for stability when the knee is 'loose packed'. The fact that the apices of the triangles are located higher than the line of motion further discredits the four-bar linkage concept.

Abstract no.: 29430

KINEMATICS OF THE KNEE JOINT: THE ROLE OF THE TIBIA IN SAGITTAL PLANE MOTION

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The purpose of this study was to resolve the dichotomy of views regarding the movement of flexion-extension of the knee joint. Early editions of the Gray's anatomy describe the tibia as gliding backwards upon the femoral condyles during flexion and executing the reverse during extension. More recent writings by contrast have perceived the tibia as a platform upon which the condyles rolled and glided. Coronal MR images of knees with intact cruciate and collateral ligaments were obtained from the Spire Leicester Hospital. The images were viewed on a dedicated workstation and the longitudinal axes of the ligaments were traced out. Ligament attachments on the femur were along the trans-epicondylar line. The MCL and PCL attached either side of the medial condyle. The ACL and LCL attached either side of the lateral condyle. Ligament attachments on the tibia were neither on the same horizontal nor on the same coordinates. The ACL and PCL attached fore and aft whilst the MCL and LCL attached port and starboard. Viewed together, the ligaments appeared to 'suspend' the tibia from the femur during the flexion-extension movement. This accords with the classical view of the tibia gliding back and forth upon the condyles during the flexion-extension movement. The arrangement is akin to a multi-string pendulum. The trans-epicondylar line is the fixed point of the pendulum, the tibia is the 'bob' and the ligaments are the 'wires'.

Abstract no.: 29434

RE-OSTEOSYNTHESIS AFTER NON-UNION WITH IMPLANT FAILURE IN LONG BONES: PRINCIPLES AND PRECAUTIONS

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Introduction: Implant failure is common problem after fracture fixation and has become one of the common causes of non-union today. More and more implants being used all over the world but if surgeon does not follow all the principles meticulously then breakage of implant is the rule. This becomes a difficult problem to deal with. **Material and methods:** We studied 50 adult patients of broken implant with non-union in the long bones of the extremities and tried to find out the causes of debricollage (implant failure). We tried to find out what principles and precautions need to be followed for re-osteosynthesis in these situations. **Results:** We observed that the common cause of the implant failure was the technical failure and less commonly the quality of implant and the patient related factors. If surgeon follows the principles of internal fixation properly in the first surgery while respecting the biology then the chances of implant failure reduces. **Discussion:** For re-osteosynthesis the principle of treatment is retrieval of the failed/broken implant, preservation of biology and re-fixation of non-union after freshening of the edges and opening the medullary canal and putting autologous bone grafts. The most important is respect of vascular supply to fracture ends and thus the preservation of soft tissue biology.

Abstract no.: 29435

BENIGN LYtic LESIONS IN HEAD AND CERVICO-TROCHANTERIC AREA OF FEMUR – BIOLOGICAL RECONSTRUCTION

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Introduction: Proximal femur is an area of high stress and transmits the weight of the body to the lower limbs. This is a common area for osseous tumors after the knee in the lower extremity. The reconstruction in this area needs to be stable and strong enough to withstand these stresses.

Material and methods: There were total 24 patients (16 males and 8 females) in this study. In 17 cases the bone cortex was intact in >2/3rd of the femoral neck circumference & these required extended curettage and bone grafting. In 8 patients with pathological fracture at presentation, we had to perform the resection of the neck followed by reconstruction using Sartorius based bone graft or fibular struts. The head was preserved in all cases.

Results: We could get good results in 22 patients in view of MSTS scoring, filling of the cavity with good bone and local recurrence. There was local recurrence and coax vara in two patients. The follow up ranged from two to five years.

Discussion: Extended curettage and biological reconstruction offers a satisfactory compromise with decreased recurrence rates and significantly less surgical morbidity compared to excision. Natural anatomy is least disturbed and head is preserved. The procedure is less morbid & preserves bone and anatomy for future intervention (revision/prosthesis). However the reconstruction should be able to withstand normal stresses. If the strength of the construct is doubtful, it should be reinforced with a metallic implant.

Abstract no.: 29438

TREATMENT OF HIP PATHOLOGIES: OUR EXPERIENCE OF ENDOPROSTHETICS WITH ALTIMED IMPLANT

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We evaluated the clinical and radiological results of 512 total hip arthroplasties performed during 2009-2010 with cemented and cementless systems produced by "Altimed" (Belarus). Cemented system was used in 298 cases (58.2%), cementless SLPS (Self Locking Porous System) in 214 cases (41.8%). Patients' age varied from 28 to 79 years (196 male and 316 female). Indications for operation included: coxarthrosis 2-3 stage – 391 (76.37%), avascular hip necrosis 65 (12.7%), hip fracture 65 (12.7%), rheumatoid arthritis 6 (1.17%), other diseases 38 (7.42%). Preplanning comprised standard clinical and radiological and laboratory study, CAT if required. Surgical technique involved epidural anesthesia and front external transgluteal approach (Harding type). All patients underwent preventive measures against infection, thromboembolic complications and heterotopic ossification. The clinical and radiological results were evaluated 3 and 12 month after operation. Clinical results were evaluated with help of Harris Hip Score: excellent 195 (38.09%), good 266 (51.95%), satisfactory 36 (7.03%) and non satisfactory 15 (2.93%). Complications were registered in 15 patients (2.93%): hip dislocation 5 (0.98%), deep periprosthesia infection 4 (0.78%), periprosthesia fracture 6 (1.17%). This study has shown that total hip arthroplasties with cemented and cementless systems produced by Altimed JSC demonstrate good and excellent results as treatment of degenerate and distrofie hip joint diseases and hip trauma.

Abstract no.: 29440

PRIMARY HIP ARTHROPLASTY USING MULLER REINFORCEMENT RING

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Materials and methods: In a clinical center in Minsk from 2006 to 2010 67 hip arthroplasty were performed using Muller reinforcement ring in 59 patients. There were used both the original rings manufactured by Mueller MATHYS (31 implants) and the domestic version of the ring produced by ALTIMED Belarus (36 implants). The average age of patients was 49.1 years (range 24 to 79 years), men - 10 (16,9%), women - 49 (83,1%). Indications for primary arthroplasty with Muller reinforcement ring were: dysplastic coxarthrosis (48 cases), Protrusion coxarthrosis (10 cases), posttraumatic coxarthrosis with defects of the acetabulum (3 cases), multiple cysts of the acetabulum (2 cases), severe osteoporosis of various etiology (4 cases). In 17 cases, additional bone grafting was performed with spongy and cortex-spongy transplant. In all cases, applying of Muller support rings resulted in good primary stability and correct positioning of the acetabular component. In the early postoperative period in three patients occurred dislocations of head component. Deep infection developed in two cases. **Results and methods:** Long-term results in terms of up to 4 years were followed in 48 cases. Harris scale was used for evaluation of clinical results, excellent result was achieved in 14 cases, good in 21 cases, satisfactory in 11 cases, poor in 2 cases. Osteointegration of acetabular component was observed in 38 cases (X-ray examination), stable fibrous fixation - 8 cases, instability of the reference ring - 2 cases.

Abstract no.: 29443

SURGICAL TREATMENT OF CENTRAL METATARSALGIA

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Materials and methods: Plantar displacement of the II-IV metatarsal heads is an important component of forefoot deformation for pes planus transversus and hallux valgus. Traditional operations used for correction (the first metatarsal osteotomies), not always eliminate metatarsalgia. We use techniques of partial or total resection of the second, third and fourth metatarsal heads for complete elimination of metatarsalgia.

Results and discussion: From 1998 till 2009 we performed 92 operations of metatarsal heads resection in 72 patients with pes planus transversus and hallux valgus aged 45-76 years. Resection of the second metatarsal head was performed in 35 cases, the second and third – in 37, and the second, third and fourth – in 20 cases. This operation was used as the basic surgical procedure alone on 15 feet. In 17 cases of flexible forefoot deformity it was performed in addition to modified McBride procedure. In 60 cases of «rigid» forefoot this procedure was used with combined technique, including the first metatarsal osteotomy and the adductor hallucis transfer. Fifty patients (65 feet) were evaluated at a mean of 4,2 years after surgery. Excellent results were achieved in 16 cases (24,6 %), good – in 40 (61,5 %), satisfactory – in 7 (10,8 %), poor – in 2 (3,1 %) cases. The technique of partial or total resection of the second, third and fourth metatarsal heads is a simple procedure with good functional and aesthetic effects. It may be the method of choice in correction of central metatarsalgia in patients over 45 years.

Abstract no.: 29445

**END RESULTS OF CEMENTED HIP REPLACEMENT BY
ENDOPROSTHESIS OF ALTIMED AMONG THE OLD AGED AND
ELDERLY PATIENTS WITH FEMORAL NECK FRACTURE**

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The purpose of the work is to improve treatment results of the old aged and elderly patients by the way of cemented replacement. Materials and Methods: During period from 2005 till 2010 cemented replacement is performed to 385 patients in clinic of traumatology and orthopedics (BelMAPO). Among them, 257 patients had femoral neck fractures and pseudarthrosis. Clinical charts of 43 patients operated in 2005 were analyzed. Among them 13 male at the age of 68-87 (average age is $76,2 \pm 4,4$ years), 30 female at the age of 64-89 (average age is $84,2 \pm 4,4$ years). Femoral neck pseudarthrosis after osteosynthesis is revealed among 13 patients, femoral neck fracture - 30 patients. Comorbidity was registered among all patients. According to Harris scale the average grade in pre-operational period was 30 - 42 grades. In 5-year observe period after operation 18 patients (41.9 %) were able to walk independently without support (more than 90 grades according to Harris scale), 15 patients (35%) used walking-stick (according to Harris scale 80-90 grades), 4 patients (9,3%) used a pair of crutches (according to Harris scale 70-79 grades) and 3 patients (7%) could not walk independently, walking frame. Three patients died, comorbidity was the reason of death. Conclusion Hip replacement of cemented fixation by Altmed endoprosthesis proved to be good syrgery choice among old aged and elderly patients.

Abstract no.: 29446

**INVASIVE DIAGNOSTIC METHODS OF SUBCLINICAL
PHLEBEMPHRAXIS AMONG PATIENTS WITH PROXIMAL FEMORAL
PATHOLOGIES**

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Purpose of research: Noninvasive diagnostics of phlebemphraxis among patients with coxarthrosis deformans and femoral neck fractures. Materials and methods: The results of ultra sound examination of low extremitas veins are analized among 18 patients without signs of venous insufficiency. The research group consisted of 11 female and 7 male patients. Coxarthrosis deformans of the 3-rd stage registered at 16 patients, 2 patients had subcapital femoral neck fracture. Average patients' age was 51,8 (from 40 to 78 years). Average term of staying in the hospital till the research -3,3 days (from 2 to 5 days). The research began 2-3 days and nights before operation of total hip replacement and after 10-12 days and nights after operation. Thrombosis complication was prevented according to standard scheme using low-molecular weight heparin. Research was conducted with the help of detector (frequence 5 MHz) according to standard method of research of distal part of iliac, total femoral, popiteus and large subcutaneous veins (Cockett-1;2;3). Results and Discussion: During U/S scanning among 18 patients, with no clinic signs of venous insufficiency, subclinical phlebemphraxis was revealed among 4 patients (22,2 %). Three of them had subclinical trombs in pre-operational period (16,6 % from the number of being researched). One patient required instalation of kava – filter before the replacement, one patient at post-operational period (subclinical tromb). Conclusions: U/S of low extremitas veins is high informative noninvasive way of diagnostics of subclinical phlebemphraxis among patients with proximal femoral pathology both in pre- and post-operational periods.

Abstract no.: 29447

LEVEL OF IMMUNE STATE AMONG PATIENTS WITH CHRONIC POST-TRAUMATIC OSTEOMYELITIS

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Materials and methods: Cellular and humoral immune system, phagocytosis were studied among 30 patients with chronic osteomyelitis were evaluated (male at the age 20-40 years). 25 primary donors (male) comprised control group. Results and Discussion: Different changes of immunologic reactivity of body were observed. In comparison with CG the consistence of leucocytes in blood of research group was too high $9,86 \pm 2,11 \cdot 10^9/l$. In addition to reduced absolute quantity of T lymphocytes – $1,08 \pm 0,38 \cdot 10^9/l$, the quantity of CD 4+ lymphocytes was reduced – $0,81 \pm 0,35 \cdot 10^9/l$ and increased consistence of CD 8 cells $0,78 \pm 0,31 \cdot 10^9/l$. The quantity of natural killers was too high – $0,73 \pm 0,28 \cdot 10^9/l$; lymphocytes with receptor was IL-2 (CD25) – $0,81 \pm 0,26 \cdot 10^9/l$. Evident changes in humoral immune system registered, as well as too high consistence of G immunoglobulins in comparison with control group, A immunoglobulins – $3,8 \pm 1,6 g/l$ and $2,3 \pm 0,63 g/l, p < 0,01$). Consistence of circulating immune complexes in patients' blood was too high – till $123,0 \pm 22,30$. Phagocytic malfunction of blood nitrophils occurred in reduced absorbing and digesting functions. Clinical course of post-traumatic chronic osteitis was accompanied by cellular and humoral immuno depression and phagocytosis, degree of evidence depended on disease durability and severity. Conclusion: The results of research were used for further better grounded prescription of immune compensators in complex treatment of the disease.

Abstract no.: 29448

INJURIES OF SOFT TISSUES OF CHILDREN AND TEENAGERS WITH SHAFT BONE FRACTURES OF BRACHIUM AND OPPORTUNITY OF ITS VISUALIZATION

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Materials and Methods: 30 patients of child and teenage age with shaft both bone fractures were studied (9 girls and 21 boys, average age 9.5 years). The state of soft tissues and interosseal membrane were studied by U/S scanning of brachium while entering hospital, in pre and post-operational periods (3-90 days). Basic geometrical components of interosseal membrane, as well as arterial and venous flows were evaluated. **Results and Discussion:** U/S screening showed that 21 patients (70%) with diaphysial fractures of both brachium bones with dislocation of bones' fragments had enhancement of central ligament breadth of interosseal membrane 3-7 mm at expense of goffering of the last (reduction of the distance between ulnar and radial bones of injured extremities), 2 patients (6.6%) were marked total injury with diastasis to 2 mm, that was accompanied by acute puffiness and sinking-down of central ligament of interosseal membrane. Presence of bone dislocation towards interosseal membrane more than breadth among 7 patients (23.3%) had acute reduction of blood flow along interosseous artery, and total absence of it with appearance of blood flow along collateral branch. In 6 cases (20%) patients with transverse fractures of radial or ulnar bones with fragments' dislocation had interposition of muscles between fragments. **Conclusions:** Diaphysial bone brachium fractures are accompanied by injury of soft-tissued component in 85-90% cases. Results of U/S study must be considered while choosing treatment strategy for patients with diaphysial bone brachium fractures, especially in case of suspect interposition of soft tissues.

Abstract no.: 29449

**BONE DEFECTS OF JOINT RECESS OF SHOULDER BONE - THE
REASON OF FRONT INSTABILITY OF SHOULDER JOINT**

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Materials and Methods: During period 2005–2009 82 patients with front shoulder joint instability were treated. Computed tomography of shoulder joint allowed to diagnose defects of joint recess of shoulder bone and shoulder head among 7 patients. Average age of patients was $50,5 \pm 3,8$ years (from 27 to 60 years). 4 male and 3 female. Anamnesis of one patient registered more than 90 dislocations, others – from 4 to 30 (average 11 dislocations). **Results and Discussion:** Beside routine radiological research patients with front instability of shoulder joint have more diagnostic possibilities when using computed tomography of shoulder joint. 7 patients with defects of joint recess of shoulder bone operational treatment included performance of diagnostic arthroscopy of shoulder joint from back arthroscopic access and performance of operation Bristov-Laterge from front access. During arthroscopy the focus of chondropathy of 4-th stage in the area of back shoulder head (dimension – from 15x18 to 20x25mm) was revealed among 4 patients, 3 patients had fractures of the 1st stage in this area acc. to Rowe, 2 patients had partly tendon ruptures of supraspinous muscle. 7 patients had evident amyotonia of front strain of sprain complex in the area of the defect of front-low side joint recess of shoulder bone, especially of low shoulder-bone ligament. **Conclusions:** Etiological approach to the treatment of regular shoulder dislocation must provide for revealing of concrete reasons of instability. Visualization of front-low side of shoulder bone defects is surely performed by the way KT of shoulder joint and intraoperative arthroscopy.

Abstract no.: 29450

DDH-ULTRASONOGRAPHY HIP SCREENING

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Data from a general US – screening in technique ooc. Graf are from Austria and Switzerland. In Austria the conservative treatment rate of DDH and hip dysplasia was before ultrasound screening 12% and could be reduced 1992 one year after introduction of the screening to 6%, open reduction to 0,23/1000 newborns. Costs for US –screening and treatment together had been 1/3 cheaper than only the treatment costs before US – screening. In Germany -screening coverage range is 90% (1996 – 2001). Open reductions and osteotomies could be reduced to 0,26/1000 newborns. DDH was sonographically diagnosed in 55% up to the 6th week, but 18% were not screened (compliance of parents, organisation problems). Because of partially low quality of sonograms 13% had a wrong diagnosis! Quality control and – management as well as trainingprograms (certificates!) are introduced now. Poland: In 1987 5% had an US –screening, in 2005 80% of all the newborns. Surgery dropped down from 3500 cases to 500 a year. Austrian screening: 1991 – 2004 (80.000 newborns/year): Since 1980 the adjusted functional treatment rate (12%) has been reduced to 3,23 % in 2004, while early late cases have been also diminished to an international competitive rate of 0,13 open reductions per 1000 newborns. Costs of operative treatment (open reductions, acetabulum plasty, pelvic osteotomies) upon age of two years had been reduced per 1000 newborns from 3223 Euro (1994) to 454 Euro (2004).

Abstract no.: 29453

LARGE TRAUMATIC WOUND DEFECTS SURGICAL RECONSTRUCTION

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From 2004 to 2009 354 patients with large trauma defects of limb soft tissues were observed. Debridement with limb fixation using Ilizarov apparatus was performed. Primary plastic closure of infected defects with denudated bone fragments and tendons (45.7% of patients) was impossible. The technique of guided apparatus dermatotension (45 patients) was used in mobility of infected defect margins. Transcostal pin-rod apparatus for dermatotension in limb stump defects was developed, as well as device for wound dermatotension. Dermatotension was performed in conditions of infectious process and divided in two steps: longitudinal and oncoming. Distraction regimen being 5-7mm/24 hours. Wound defects were eliminated in the main group on the 8-th-9-th day (the control – on the 15th–18th). 56 patients in the experimental group with rigidity defects margins underwent of cortical layer fragments osteoperforation using a 1mm. drill. "Myramistin hydrogel" dressing was used in main group patients, while gaus bandage with hydrophilic antibacterial ointment was applied in the control group. Rapid normotrophic granulation appearance (5th day) was determined (control on 11th–14th day). According to morphological and microbiological monitoring, features of infected and degenerated bone and tendon tissue were not evident. On the 8th-9th day, bifid graft autodermoplasty was performed (control on 13th-15th day). Use of dermatotension and osteoperforation allows eliminating the defects in the shortest time by the patients own tissue, avoiding complications and reconstructed surgery, with good cosmetic and functional result. Use of hydrogel plates favorably influences wound process, stimulates reparation, prevents dehydratation, degeneration, infecting the bone and tendon tissue.

Abstract no.: 29454

NONUNION OF INTERTROCHANTERIC FRACTURES

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We evaluated 17 cases of nonunion trochanter fractures a seldom reported entity. 17 patients, mean age 49.7 years (25-76 yrs) 14M:3F, treated between 1993-2004 were analysed. The mean duration between trauma and presentation was 10.6mo (4-24 months). They were initially treated by nonoperative (n=10), osteopathic (n=3), implant failure (n=3) and no treatment (n=1). Fracture types were 31A 2.3(n=10), 3.3(n=3), 2.2(n=2), 1.1(n=2) cases. The excision of pseudoarthrosis, freshening of bone ends, reduction and internal fixation with DHS (n=13), double angle dynamic condyler screw (n=1) and external fixator (n=3) were bone grafting was performed. Post operatively pin traction (6 weeks) followed by axillary crutch walking with toe touch advocated. The healing was evaluated clinicoradiologically at every 6 weeks. The mean follow-up was 3.2 years (range 2-6 years). The lost to FU (n=1) died (one 8mo). The fracture union occurred in 16 patients with mean union time 5.6mo (pintract infcetion 4-7 months). The hip motions were terminally restricted in 12. We documented pintract infection and avascular necrosis of head of femur in one each. More than 2cm shortening was noted in 3 patients. The trochanter NU is more common with A2.3 and A3.3 fractures. Excision of pseudoarthrosis, freshening of bone ends, stable fixation, bone grafting provides fracture union and good functional outcome.

Abstract no.: 29457

FACTORS TO PREDICT DEGENERATION OF PCL IN TOTAL KNEE ARTHROPLASTY PATIENTS WITH OSTEOARTHRITIS KNEE

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Osteoarthritic patients reporting for Total Knee Arthroplasty are at an advanced stage of degeneration. Controversy exists whether the posterior cruciate ligament (PCL) should be substituted or not. Aim was to find out the factors for predicting the degeneration of PCL so that right type of implant could be chosen for Total Knee Arthroplasty. This study was carried out prospectively in 23 knees (17 patients) of advanced Osteoarthritis of knee admitted for Total Knee Arthroplasty. They were subjected to preoperative clinical and roentgenographic assessment and graded on the basis of modified Ahlback criteria¹². Further, macroscopic evaluation of both cruciate ligaments was performed and appropriately graded. The tibial articular cartilage erosions were assessed for the depth of lesion using Outerbridge classification¹³. Histopathological examination of PCL was done. Statistical correlation of clinico-radiological parameters with histological degeneration of PCL was performed. Macroscopic status of anterior cruciate ligament and tibial cartilage were then compared with the histological status of the posterior cruciate ligament. There was statistically significant correlation of histological changes of posterior cruciate ligament with Knee Society score (based on clinical picture such as pain), AP instability, macroscopic appearance of anterior cruciate ligament and knees with Outerbridge grade IV changes in the lateral tibial plateau. Thus Knee Society score, Anteroposterior instability, macroscopic appearance of anterior cruciate ligament and knees with Outerbridge grade IV changes in the lateral tibial plateau may serve as important predictive factors for degree of degeneration and functional insufficiency of posterior cruciate ligament.

Abstract no.: 29459

ULTRASOUND-GUIDED FEMORAL AND SCIATIC NERVE BLOCK

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The purpose of this study is to investigate the usefulness of ultrasound-guided femoral and sciatic nerve block by orthopaedic surgeon to operate the fracture around ankle. Thirty-five patients were included for this study, They were among the patients with fracture around the ankle joint area from January to July 2010, who had an operation through a ultrasound-guided femoral and sciatic nerve block. There were 16 cases of lateral malleolar fracture, 7 cases of bimalleolar fracture, 5 cases of trimalleolar fracture and 7 cases of pilon fracture. We measured the procedure time of nerve block, anesthetic induction time, effective analgesic time, and anesthetic complication, VAS satisfaction score for nerve block and patient's choice of anesthetic method in same situation or metal removal. It took average 5.2 minutes for the nerve block, 47.5 minutes for complete anesthetic induction, 10.8 hours for effective analgesic time. Mean VAS satisfaction score was 9.1. 33 cases (94%) chose same anesthetic method for metal removal or same situation in the future. Ultrasound-guided femoral and sciatic nerve block by orthopaedic surgeon in the fracture around ankle reduces anesthetic complication and nerve injurycomplication and leads to high anesthetic success rate. Also it is considered as an effective method to alleviate postoperative pain.

Abstract no.: 29461

**COMPLEX ARTERIO-VENOUS MALFORMATION OF THE FOREARM
PRESENTING AS WRIST PAIN**

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Introduction: A 12-year-old right-handed boy was referred to our unit for evaluation of wrist pain and oedema with radial bone abnormalities secondary to an undiagnosed complex AV malformation. Case: A 12-year-old right-handed boy presented to Accident and Emergency following a low impact injury of his right index finger. Assessment and x-ray of the digit was normal and consequently he was discharged home with analgesia. Over the next 24 hours he developed an acutely painful, oedematous wrist. He re-presented to the Emergency department the following day and routine x-rays of the forearm revealed that the radius and distal ulna displayed abnormal cortical thickening and tunnelling with increased sclerosis and linear-lytic areas, especially at the distal radial and ulnar epiphysis and metaphysis. A skeletal survey showed no other bone abnormalities. The pain slowly resolved with analgesia but the oedema persisted. He was thus referred to our unit for further orthopaedic evaluation. During our consultation it was elicited that the child had for several months been aware that his arm was "noisy", especially at bedtime. There was also a family history of fibrodysplasia. His physical examination was normal apart from marked right hand and forearm hypertrophy. Investigation with MRI scan revealed the presence of a large, complex Aterio-Venous malformation associated with multiple abnormal vessels throughout the forearm. The patient was therefore referred to a specialist centre for further investigation and management.

Abstract no.: 29466

RESULTS OF LOCAL STEROID INJECTION IN THE TREATMENT OF CHRONIC EXTRA-ARTICULAR PAIN AFTER TOTAL KNEE ARTHROPLASTY

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Total knee arthroplasty (TKA) is one of the most successful operations in orthopedics surgery nowadays. However, there were numbers of patient suffered with chronic extra-articular pain after operation despite full treatment with oral medications. We conducted this study to analyze results and complications of local steroid injection in this group of patients. Material and Methods: We retrieved data from all patients underwent TKA whom suffered with chronic extra-articular pain and received local steroid injection by 2 senior authors during January 1, 2008 to June 30, 2010. General data such as age, sex, BMI, Prosthesis type were recorded. Clinical evaluation such as pain score, knee score and functional score were recorded pre-injection and three months after injection. Complications after injection such as infection and discoloration were also recorded at mean follow up of 15 months (2-31 months). Results: There were 29 knees from 28 female patients with mean age of 64.7 year and mean BMI of 27.7 Pain evaluation in term of mean VAS was reduced from $56.5+/-20.32$ to $20.57+/-16.1$. Mean knee score was improved from $74.62+/-14.24$ to $85.71+/-11.85$. Mean functional score was also improved from $53.4+/-22.57$ to $67.04+/-21.17$. All clinical difference has statistically significant with p-value <0.05. There was no incident of infection or other complications in this study. Conclusion: Local steroid injection is a safe and effective choice for treatment of chronic extra-articular pain after TKA.

Abstract no.: 29467

SARCOMA SYNOVIAL - CASE REPORT

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Introduction: The synovial sarcoma (SS) represents 5-10% of primary malignant tumors of soft tissue and usually occurs in young adults and children. Despite the name, it doesn't derive from synovial tissue although it is histologically similar. It has invasive tendency, propensity for metastasis and slow growth. Treatment includes wide surgical excision, adjuvant chemotherapy and / or RT. **Material and methods:** The authors present the case of a 22 years old woman with mechanical knee pain and left popliteal mass, with 6 months of evolution. During that period the swelling quickly turned into a mass of considerable dimensions causing flexion of the knee, leg edema below the lesion and the appearance of collateral venous circulation. Radiographic study was normal, the ultrasound, CT and MRI suggested the diagnosis of a bulky articular Baker's cyst (12 cm x 6.2 cm x 5.4 cm). Moreover MRI warned for the presence of hemorrhagic complication, thickening walls and vascular compressive effect. Puncture of the mass revealed sero-hematic fluid. Surgery was carried out. **Results:** The pathological examination revealed the presence of a synovial sarcoma. The patient was submitted to chemotherapy after surgery. After two years of follow up the woman is clinically well. **Conclusion:** The evolution of the lesion, even in the absence of calcifications, should alert physicians to the possibility of Synovial Sarcoma and not a Baker's Cyst, even when all study points towards a benign lesion.

Abstract no.: 29469

DETACHING OF THE GRACILIS AND SEMITENDINOSUS TENDON FOR SPONTANEOUS OSTEONECROSIS OF THE MEDIAL FEMORAL CONDYLE: A CASE REPORT

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Here we report a case could be considered to prevent the development of spontaneous osteonecrosis of the medial femoral condyle (SONK) by detachment of the gracilis and semitendinosus tendon. The patient was a 60 year old woman. Objective findings, ROM of knee joint 30/130. Contracture was observed in the medial compartment of the knee valgus stress. There were no abnormal findings on the XP. MRI in the femoral condyle at T1, T2 low intensity changes observed. Using Koshino's classification .The patient' lesion was classified as stage 1. Surgery was performed. We detached tendon from pes anserinus. 1 year after surgery, admit objective abnormalities. Lysholm score improved from 55 to 95 points. The finding in XP advanced to stage 2. But, MRI showed a reduction in T1 in the low intensity area. We speculated that this is one factor that increases the pressure within the medial compartment of the knee joint. We transected the semitendinosus tendon and gracilis tendon for the purpose of the vacuum pressure inside the compartment. We need to assess further and if they are involved in a compartment inside the pressure as a cause of disease in SONK. The technique of detachment gracilis and semitendinosus tendon was considered to be a good idea of even considering surgery as a way for patients with SONK.

Abstract no.: 29470

POSITIONING OF THE FAR ANTEROMEDIAL PORTAL INCISION TO MINIMIZE THE POTENTIAL RISK OF INJURY TO THE ARTICULAR CARTILAGE

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Purpose: The purpose of the present study was to estimate the potential risk of injury to the articular cartilage of the medial femoral condyle (MFC) when performing anterior cruciate ligament (ACL) reconstruction from the far anteromedial portal. **Methods:** Magnetic resonance imaging was performed in 10 healthy volunteers (5 males, 5 females) without ligament injury or pre-existing arthritis. The knee flexion angle was fixed at 120 degrees. Multiplanar reformatted (MPR) two-dimensional images containing the femoral ACL footprint and medial meniscus were obtained. A line forming a tangent to the MFC from the femoral ACL footprint was defined as line A, and its intersection with the skin was defined as point B. The distance between the medial edge of the patellar tendon and point B was measured. **Results:** The median distance in all cases was 24.5 mm (24.4 mm in males, 24.7 mm in females). **Discussion and conclusion:** Some studies have estimated the risk of damage to the lateral femoral condyle or the surrounding structures when drilling femoral tunnels through the anteromedial portals during ACL reconstruction. However, no reports have indicated any damage to intra-articular structures, and we have focused on the potential risk of damage to the articular cartilage of the medial femoral condyle. In the present study we clarified the safe area for incision when drilling femoral tunnels through the far anteromedial portal.

Abstract no.: 29472

VERTEBRAL BODY AUGMENTATION USING VERTEBRAL STENT

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22 patients have undergone vertebral stent surgery with 29 levels in 2010. 19 patients with 26 levels with a minimum follow-up period of 3 months after the surgery were included in the study. The patients completed VAS before the surgery, one week, 6 and 12 weeks after. Reduction of the vertebral body was assesed according to the change of the vertebral body height in the anterior (AVBH), medial (MVBH) and posterior (PBVH) part of the vertebral body and according to the change of the vertebral body kyphosis angle (VBKA). Out of 24 osteoporotic fractures the stents were deployed in 20 vertebral bodies. Preoperative AVBH was 19.41mm, after reduction 22.775mm, which is the change of 3.365mm, i.e. by 17.34%. The MVBH values were 16.625mm and 23.035mm, respectively, which is the improvement by 6.41, i.e. by 38.56%. The mean post-injury and postoperative PBVH was 26.835 and 28.31, respectively, which is the improvement by 1.475mm, i.e. by 5.5%. The pre-operative and post-operative VBKA was 11,71° and 7,13°, respectively, i.e. a recovery of the vertebral body angle by 4,58°, i.e. 35.2%. The mean VAS values before the surgery were 81.4. In the first week after the surgery the value dropped to 30.6. The mean values were 16.3 six weeks after stabilization and they remained stable during the next three months - the mean value was 15.4.

Abstract no.: 29473

MUSCLE NECROSIS AFTER LUMBAR SURGERY

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Lumbar necrosis is a major although not so frequent problem in lumbar surgery. Blood supply to lumbar muscles can be damaged especially if the surgeon doesn't release the spreaders every 20 m. However additional pathology might in fact facilitate the event. We describe the case report of 2 patients with lumbar degenerative disease and lumbar stenosis that were treated with posterior decompression and postero-lateral instrumented arthrodesis of the lumbar spine. The first one using regular pedicle screws in L5-S1 and the second in L3-S1 using cement augmentation through pedicle screws. As additional pathology the first patient had a Polycythemia vera and the second one diabetes. The first patient had a significant muscle necrosis without wound healing that was treated with surgical debridement and insertion of several collagen plaques to fulfill the space. The second patient healed progressively without any further surgery either the muscle damage or the skin wound. However he needed 3 months before complete recover. Muscle necrosis is a potential surgical complication that needs to be in surgeons mind before any lumbar approach. Careful clinical evaluation of patients specifically looking at comorbidities might help the surgeon avoiding major problems or even selecting less aggressive techniques to treat their patients.

Abstract no.: 29480

THE POWER OF NUMBERS – A NOVEL OBJECTIVE ANALYSIS IN MEASURING CERVICAL SPINE STRENGTH AND OUTCOME AFTER CERVICAL SURGERY

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Abstract: Background: Proper conditioning of the neck musculature is proposed as a practical but untested method of injury prevention, and an effective way of managing post injury pain and muscle weakness. Clinical studies have used intensive strength training of the neck muscles as the primary treatment of patients with chronic pain, demonstrating a reduction of pain intensity and increase in muscle strength. Few however strengthen the musculature to the level needed to withstand the forces a player is exposed to in a game situation and to date no data has been published on muscle strength outcome post cervical neck surgery. Method: Rugby players were evaluated using a novel method to assess cervical strength pre and post operatively to assess fitness and return to play. Results: Rugby players with a myotome pattern of muscle weakness in the upper limb who were not responsive to physiotherapy underwent surgery with subsequent improvement in muscle power $P<0.05$ Interpretation: Despite the morbidity associated with neck injuries and the potential for catastrophic nature of the injury, other than the UK MRC 0-5 strength grading, the authors to date are unaware of published research into the strengths generated from the cervical spine. Further still, the importance of these figures for both accurate documentation pre and post surgery and for future rehabilitation.

Abstract no.: 29483

**FOOT & ANKLE INJURIES IN ELITE PROFESSIONAL FOOTBALLERS:
THE FINDINGS OF ONE ENGLISH PREMIER LEAGUE TEAM**

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Introduction: Foot and ankle injuries are a common occurrence amongst all footballers. The aim of this study was to establish the frequency and variation of foot and ankle injuries within one English Premier League (EPL) professional football club over the course of a season and attempt to identify any factors associated with the injuries. **Method:** Data was collected prospectively for all foot and ankle injuries suffered by first team players over the 2008-09 and 2009-10 EPL season at one EPL club. Each player's demographics were recorded along with various factors concerning or influencing the injury including ground conditions, foot posture index score (FPIS), type of injury, ability to continue playing, recovery time, mechanism of injury and footwear type. **Results:** The most common injury was 5th metatarsal fracture seen in 33%. Lateral ligament sprain was seen in 28% and syndesmosis injury in 17%. The mean recovery time following 5th metatarsal fractures was 76 days. 67% of all injuries (100% of 5th metatarsal fractures) were sustained while wearing blade footwear, 17% wearing the more traditional studded footwear. Supination was the most common FPIS, present in 43%. 56% of injuries were in the dominant (kicking) side while 50% of injuries were sustained in the tackle. There were no ankle fractures observed. **Conclusion:** 5th metatarsal fractures are the most common foot & ankle injury amongst professional footballers; ankle fractures are relatively rare in comparison. Injuries occur more frequently with blade footwear, with supination being the most common foot posture at the time of injury.

Abstract no.: 29485

PROSPECTIVE COMPARISON OF FUSION TECHNIQUES FOR TREATMENT WITH DEGENERATIVE LUMBAR SPONDYLOLISTHESIS

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Introduction: This prospective cohort study was designed to examine if more patients with degenerative lumbar spondylolisthesis (DLS) have clinically significant improvement following unilateral transaxillary interbody fusion (UTIF) than those who received posterolateral fusion (PLF). Methods Using structured protocols for prospective data collection, 60 consecutive DLS patients were assigned to receive UTIF ($n = 30$) or PLF ($n = 30$) based on institute's preference. Pre- and postoperative visual analog scale (VAS) of pain and Japanese Orthopaedic Association Back Pain Questionnaire (JOABPEQ) were independently assessed with clinically significant differences defined as a 20% improvement in VAS and 20 points improvement in five subscales of JOABPEQ. Using SPSS software, data were analyzed and $P < 0.05$ was considered significant. Results Patients were predominantly female (87%) with a mean age of 64 years (49–81). There were no significant differences in preoperative VAS and JOABPEQ subscale points, the number of fusion levels, blood loss and operation time between the two groups. Follow-up was 85% at 1 year. There were statistically significant differences in > 20 points improvement of pain-related disorders (64% for UTIF, 46% for PLF), lumbar spine dysfunction (68% and 42%) and social life disturbance (72% and 46%) at any time. There were no significant differences in improvement of VAS, gait disturbance and psychological disorders, patients' satisfaction (VAS, 82mm and 72mm) and fusion rates at 24 months. **Conclusions:** Although there were no differences in gait disturbance and patients' satisfaction between the two groups, less access technique of UTIF might result in better outcomes.

Abstract no.: 29488

**ASSESSING THE NEED FOR A CALIBRATION BALL IN PRE-OPERATIVE
TEMPLATING OF ELECTIVE TOTAL HIP REPLACEMENT USING
TRAUMACAD SOFTWARE**

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Introduction: Pre-operative templating has become an essential aspect of pre-operative preparation for total hip replacement (THR). Many different techniques exist as to how to template accurately. This study compares the accuracy of templating with and without a calibration ball using TraumaCAD software. **Methods:** The pre and post-operative radiographs of 40 patients undergoing (THR) by a single surgeon at a United Kingdom hospital were retrospectively reviewed. Two groups were identified, one had templating performed using a calibration ball placed medially to the patient's thigh and the other using a standardised repeated technique without a calibration ball. The templated acetabular component and femoral stem was compared to the actual size of acetabular and femoral prostheses inserted at surgery. **Results:** The acetabulum was accurately templated in 40% of the hips when using the calibration ball and 42% when using no ball ($p > 0.05$). The femur was accurately templated in 30% with a calibration ball and 25% without ($p > 0.05$). There was however a significant difference between groups when observing the accuracy to within one size of that used. The acetabulum accuracy was significantly higher in the templating ball group (95%) than no ball (83%), $p < 0.005$. There was also a significant difference observed with the femur, 85% with the ball and 67% with no ball, $p < 0.05$. **Conclusions:** Use of a calibrated templating ball is only of significant benefit in accuracy of templating when templating to within one size of the prosthesis to be used in THR.

Abstract no.: 29490

SRI LANKAN FRACTURE NECK OF FEMUR PATIENTS AND ASSOCIATED NON BIOLOGICAL FACTORS

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Fracture neck of femur is an ever increasing challenge to the health care system globally. Developing countries are more affected due to limited resources and projected increased ageing population. Objective: To assess the prevalence and the relative importance of risk factors for femoral neck fractures in Sri Lankan population. Methodology: Descriptive cross sectional analysis with a questionnaire on associated factors among patients with fracture neck of femur admitted to the National Hospital of Sri Lanka were analyzed for a period of 01 year. Results: There were 82.9% females and 17.1 %males. Prevalence of low bone mass density was 88.4% in the fractured population. Mean BMI was 22.10 (SD 3.786, N=105). Average age distribution and weight were 72.65yrs (SD13.135) and 53.41Kg (SD10.50) respectively. 32.4 % had previous falls within 01yr before fracturing the hips, and out of which 12.4% had some other fractures. Pre-existing disabilities, co-morbid factors, mechanism of fall, family and environmental factors were studied. 88% had a pre-existing disability, where poor vision contributing in 68.6%. Calcium channel blockers were the highest on long term pharmaceutical consumptions. Incidence of alcoholism and smoking were less as expected .These figures were compared with regional and western studies. Conclusion: The figures depict the different socio-economic conditions between western and Sri Lankan population. A preventive program aiming at non biological factors could minimize a significant proportion of hip fractures.

Abstract no.: 29492

ANALYSIS OF ULNAR VARIANCE IN SCAPHOID FRACTURE

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Aim of our study is to measure ulnar variance in Indian patients who sustained scaphoid fracture. A retrospective review of radiographs of scaphoid fracture patients treated between 2007 and 2010 is done along with prospective observation of patients presenting to casualty. Scaphoid fractures and nonunions were included. Standard PA view radiograph with wrist in neutral position was chosen. Totally there were 49 retrospective cases. 11 cases without standard PA radiograph were excluded. Remaining 38 retrospective cases along with 10 prospective cases were included. Method of perpendiculars is used. Longitudinal axis of radius is marked and a line is drawn through the distal ulnar aspect of radius perpendicular to its long axis. Distance between this line and the distal cortical rim of ulna is used to measure ulnar variance. Ulnar variance of -1 to +1 mm is taken as 'ulna neutral' wrist, >+1mm as 'ulna plus' wrist and <-1mm as 'ulna minus' wrist. Of the 48 cases there were 2 ulna plus wrist, 34 ulna neutral wrist and 12 ulna minus wrist. 41 cases were males and 7 were females. Mean ulna variance was -0.53 with a standard deviation of 1.247. Range was +3mm to -4.5mm. Mode was 0mm. the distribution of our study patients was compared with data from normal population from a study by Hulten et al. significantly fewer incidence of ulna plus wrist was noted ($p<0.10$, chisquare test) in study population. There was no significant difference in distribution of ulna minus wrist.

Abstract no.: 29493

THE INCIDENCE OF GRAM-NEGATIVE HAEMATOGENOUS VERTEBRAL OSTEOMYELITIS IN A TERTIARY REFERRAL SPINAL UNIT

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Introduction: The aim of this study was to identify the occurrence of Gram negative bacterial (GNB) vertebral osteomyelitis (VO) within our unit during a 3-year study period.

Methods: Between May 2007 and May 2010, all patients, over the age of 18 years, suffering from GNB haematogenous VO were identified and their microbiological diagnoses were evaluated.

Results: This study identified 79 patients with haematogenous VO. Of these 79 patients, 10 patients (12.66%) had Gram-negative organisms isolated. These organisms included E.Coli (4), Pseudomonal aeruginosa (3), Klebsiella pneumonia (1), Haemophilus influenza (1) and Enterobacter cloacae (1). Four patients had the causative organism isolated on ≥ 2 positive blood cultures, three from biopsy and ≥ 2 positive blood culture, one from biopsy alone and two were diagnosed from 1 positive blood culture.

Conclusion: Despite the fact that GNB infections represent a minor proportion of all cases of haematogenous VO, around 15 - 23%, recent evidence suggests that the microbiology of this disease may be changing and the occurrence of GNB infections are increasing. This has been attributed a variety of factors including, an increasing proportion of individuals with predisposing risk factors such as advanced age, diabetes mellitus, malignancy and better diagnostic techniques. Results from our study show an incidence of GNB VO of 12% over a three year period, which is less than results quoted in the literature and does not confirm recent evidence that these types of spinal infections are increasing in incidence.

Abstract no.: 29496

ENHANCING THE USE OF NEW TECHNOLOGY TO IMPROVE THE EDUCATION OF ORTHOPAEDIC TRAINEES

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Introduction: In the UK, in order to progress onto higher specialist training in orthopaedics it is mandatory that all trainees complete their Membership of the Royal College of Surgeons (MRCS) Examination. Over the last ten to fifteen years dramatic advances in technology have lead new ways for trainees to learn and equip themselves with the knowledge needed to be successful in these examinations. In 2007 the iPhone was introduced which is an internet and multimedia-enabled smartphone designed and marketed by Apple Inc. Third-party applications known as Apps, which is short for Application Software, are available from the App Store run by Apple. Our study group have produced the first App for the iPhone that enables orthopaedic surgical trainees to revise for their MRCS examination from their iPhone. **Methods:** We produced an App for the iPhone covering over 200 topics examined on the MRCS examinations, including orthopaedics. **Results:** The App production is complete and will be available for use around the world at the beginning of 2011 and initial feedback from trainees is extremely positive resulting one of the leading medical publishers in the world, Pastest, backing our project in order to improve the education and progression of orthopaedic trainees through their MRCS examinations and onto higher specialist training. **Conclusion:** With advances in technology continuously evolving, it is important that methods of educating surgical trainees continues to evolve at a similar pace in order to assist in the progress of orthopaedic trainees to onto higher specialist training.

Abstract no.: 29497

ISOLATED CORONAL SHEAR FRACTURE OF THE CAPITELLUM

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Fall on the outstretched hand with radial head impacting against capitellum causes coronal shear fracture of capitellum. Identification of this fracture is difficult, conservative management of this fracture may lead to disability. Excision of the loose fragment produces instability of the elbow joint. We treated the patients with isolated capitellum fracture with open reduction and cross 'K' wire fixation. We report a series of 15 patients of age group 20 to 50 years, of which 9 were male and 6 were females. All the patients were type 1 with considerably big capitellar osseous fragment. Fall on the out stretched hand was the main cause of injury in all the patients. Patients were followed up from 1 to 3 years with average union time of 6 weeks. Results were evaluated in terms of range of elbow movement, pain at fracture site and joint stability. Results were 8 excellent, 6 good and 1 fair. Complications like non union, joint stiffness, joint instability, osteonecrosis were not found in any of the patients. Capitellar fracture fixation with Herbert or Cancellous screws is described in various literatures but we did not find any literature on the use of k wire in capitellar fracture fixation.

Abstract no.: 29498

IS HYBRID EXTERNAL FIXATION SYSTEM A GOOD TREATMENT OPTION IN PERIARTICULAR TIBIAL FRACTURES?

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Periarticular tibial plateau and tibial plafond fractures caused by high energy trauma are usually associated with extensive soft tissue damage with or without compounding. Management of such injuries poses a therapeutic dilemma. Aim of study was to evaluate the functional outcome of their management by hybrid external fixator. Out of 88 patients with Juxta-articular fractures of the tibia treated by use of hybrid external fixator (a combination of indigenously manufactured version of ring and AO tubular fixator) from February 1997 to March 2009, 79 cases were taken up for study with a minimum follow up of 12 months. The injury was due to a high velocity motor vehicular accident in 70 and fall in 9 patients. Fifty two were tibial plateau fractures and 27 were distal tibial plafond fractures. Sixty one were compound fractures and eighteen were closed. They were treated by debridement (61 compound) and hybrid external fixator (n=79). All the patients were assessed clinically and radiographically for a mean follow up of 92.5 months (range: 12-133). In tibial plateau fractures (n=52), final outcome was good to excellent in 44, fair in 3 and poor in 5. In tibial plafond fractures (n=27), results were good to excellent in 21, fair in 3 and poor in 3. We recommend the use of hybrid external fixator for periarticular tibial fractures due to high-energy trauma. Incidence of complications as seen with other modalities of fixation is greatly reduced. It facilitates adequate care of associated soft tissue injuries.

Abstract no.: 29500

PRIMARY ANEURYSMAL BONE CYST OF PATELLA, A RARE CASE

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Aneurysmal bone cyst account for less than 1% of the primary bone tumors in the body, they usually have a predilection for the metaphyses of the long bones of the leg and incidence in the patella are 1% of all aneurysmal bone cysts. We report an extremely rare case of aneurysmal bone cyst of the patella in a 20 year old male patient. The patient presented with pain, swelling over right knee joint since 1 month, there was no history of trauma. Radiograph of knee joint was showing grossly enlarged and distorted patella. Patellectomy was done. Patient was followed for 2 years with no significant complains. Patient regained normal knee functions. Different modalities like curettage, coritco-cancellous bone grafting and filling the cavity with demineralised bone matrix are described in the literature. In significant destruction of the patella, patellectomy is advisable. The rarity of this lesion in the patella and the treatment modality is discussed.

Abstract no.: 29501

GIANT CELL TUMOUR OF TALUS, A CASE REPORT

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Giant cell tumour (GCT) of talus bone is a rare entity. We report a case of giant cell tumour of a body of a talus in a male patient ageing 20yrs. The patient presented with pain, swelling and mild tenderness on deep pressure on right ankle since last 3 months with an osteolytic lesion seen in the talus on radiographs. Intralesional curettage, followed by electro-cauterization and autologous bone grafting was performed as a single procedure following which patient's pain and swelling disappeared. Patient was followed up for two and half years with no recurrence. The complete range of movements at the ankle and the subtalar joint were regained. We report our attempt to eradicate an aggressive giant cell tumour with electro cauterization. Currently we are unaware of any reports in the literature addressing curettage followed by electro cauterization and bone grafting for giant cell tumour of talus. Patients consent was taken for case report submission for publication.

Abstract no.: 29509

THORACOLUMBAR KYPHOSIS WITH NEUROLOGIC DEFICIT FOLLOWING POST-KYPHOPLASTY BURST FRACTURE TREATED WITH SINGLE-STAGE POSTERIOR VERTEBRAL COLUMN RESECTION WITH CIRCUMFERENTIAL RECONSTRUCTION AND STABILIZATION - TWO CASES REPORT

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Objective: To report two cases of progressive neurologic deterioration and thoracolumbar kyphosis associated with post-kyphoplasty T12 burst fracture that was corrected by posterior vertebral column resection. **Summary of Background Data:** The anterior surgical approach allows for more direct access to thoracolumbar burst fracture and deformity. However, an anterior approach can be associated with increased morbidity, and respiratory complications. There have been few clinical reports on posterior vertebral column resection conducted for thoracolumbar burst fracture after kyphoplasty. **Methods:** Two patients (63-year-old woman, 71-year-old man) who received T12 antecedent kyphoplasty, underwent neglected superimposed burst fracture, resulting in progressive thoracolumbar kyphosis and neurologic deterioration. Posterior vertebral column resection was performed for correcting kyphosis and preventing the spinal cord from additional injury. **Results:** Good correction of thoracolumbar kyphosis was obtained without further neurologic deterioration. The kyphotic angles were 50°/37° before surgery and 21°/ 22° after surgery. Pain, Frankel Grade, and functional status were improved in all. **Conclusion:** Correction of progressive neurologic deterioration and thoracolumbar kyphosis associated with T12 burst fracture can be achieved successfully by posterior vertebral column resection even after kyphoplasty.

Abstract no.: 29510

THE EXTRUDED TALUS: RESULTS OF REIMPLANTATION

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Open talar fractures with extrusion of the talar body or the entire talus are typically the result of high-energy trauma and are frequently associated with markedly displaced fractures, severe soft-tissue injury, contamination, disruption of the talar blood supply. The appropriate treatment of a completely extruded talus, with or without fracture, remains controversial. We report two cases of open talar extrusions following high-energy trauma, one with a total talar extrusion and the other with talar body extrusion with fracture. Both were treated with wound debridement, joint irrigation, closed reduction and external fixation. At 12 months follow up none of the patients developed infection, and one of them developed osteonecrosis without collapse. At 24 months follow-up, both patients were able to return to their preinjury level of activity, and described minimal disability. These findings indicate that satisfactory medium-term, and potentially long-term, outcomes are possible after such a severe injury and that the need for late reconstructive surgery is not absolute.

Abstract no.: 29512

**BILATERAL HALLUX VAGUS ASSOCIATED WITH OS
INTERMETATARSEUM IN A MIDDLE-AGED WOMAN**

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We describe very rare case of both relapsed hallux valgus deformity associated with os intermetatarsum. A 56-year-old woman presented with a 2-year history of forefoot pain progressed after an unsuccessful previous operative procedure in adolescence. Radiographs and computed tomography revealed the metatarsus primus varus and hallux valgus of both feet, in close relationship to the os intermetatarsum fused with medial cuneiform. Surgical treatment consisted of modified McBride procedure and Lapidus arthrodesis with excision of the os intermetatarsum and its sesamoid bones. The hallux valgus deformity improved from 61 / 57 degrees (left / right) to 2.3 / 1.7 degrees of the hallux valgus angle, 34 / 27 degrees to 3.9 / 3.8 degrees of the first intermetatarsal angle. Twelve months after surgery, AOFAS Hallux Metatarsophlangeal-interphalangeal scale was 91 points and there was no pain associating previous operation.

Abstract no.: 29513

TRAUMATIC BILATERAL POSTERIOR DISLOCATION OF THE HIP - AN UNUSUAL MECHANISM

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Traumatic bilateral posterior dislocation of the hip is a rare injury, usually sustained in automobile accidents or less commonly in automobile-pedestrian accidents. An unusual mechanism of such an injury is reported in the setting of fall on the ground from a cycle rickshaw after being hit from behind by a motor vehicle. The patient developed pure bilateral posterior dislocation of the hip, without a fracture. Most traumatic posterior dislocations of the hip are caused by head-on automobile collisions. The mechanism of injury for these "dashboard dislocations" was described by Funsten et al. involves the flexed knee striking the dashboard. However a cycle rickshaw doesn't have any structure on which the flexed knees could strike anteriorly. Possible explanations are suggested.

Abstract no.: 29520

ENDOSCOPIC TREATMENT OF THE TENDINOPATHY OF THE ACHILLES TENDON

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The aim of our work was to study the efficacy of endoscopic techniques in tendinopathy of the Achilles tendon as in sportsmen of high qualification, and in ordinary patients. Material and methods: We have treated from March 2008 till May 2010 18 patients, 10 professional athletes (high jumper and sprinter) and 8 patients who never played sports. Men were 14, women - 4, age of patients was from 25 till 57 years, average age was 36.7 years. All patients were performed ultrasound examination (US) and magnetic resonance imaging (MRI). AT function and activity were evaluated by assessment system VISA-A («Sports Assessment - Achilles tendinous» Victorian Institute of Sport – A, maximum of 100 points), Nelen Achilles Tendinopathy Scoring System (NATSS) - maximum 100 points, and visual analog scale (VAS) - maximum 10 points. Endoscopic tendon mobilization has been done to all patients. Results: According to estimates of average VISA-A score was 40.9 before surgery and after surgery - 85.5. In assessing the operation by NATSS function evaluated at an average 43.1 points, and after surgery - 89.1 points. The average VAS score decreased from 7.2 before surgery to 1.5 points after surgery. In all patients we did not observe postoperative complications. Conclusion: Use of endoscopic surgical treatment can effectively restore the function of Achilles tendon in cases of tendinopathy.

Abstract no.: 29521

RECONSTRUCTION OF ANTERIOR AND POSTERIOR CRUCIATE LIGAMENTS IN A PATIENT WITH BILATERAL CONGENITAL ABSENCE OF BOOTH CRUCIATE LIGAMENTS: A CASE REPORT

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Bilateral agenesis of the booth cruciate ligaments is a extremely rare congenital disease and this condition isfrequently associated with other anomalies of the lower limb. We didn't found presented one stage surgical ACL and PCL reconstruction. We are presenting a case of female, age 25, who injured her left knee during walking on uneven ground. Pain and instability of left knee were present despite conservative treatment. She didn't have any subjective problems with her right knee, Clinically we found great anterior and posterior sagittal instability of both knees. No other congenital abnormalities we found of lower limb. MRI showed significant closure of femoral intracondylar notch, hypoplasia of tibial eminence and aplasia of both cruciate ligaments. Because of conservative treatment fault we decided that surgical treatment is necessary. Arthroscopy showed intact articular cartilage and medial and lateral meniscus. There were no cruciate ligaments and tibial eminence was hypoplastic. Femoral intracondylar notch was closed so we performed significant notch plasty to create space for cruciate ligaments. We reconstructed posterior cruciate ligament with quadrupled hamstring tendons and anterior cruciate ligament with patellar tendon. We follow patient 18 months. On the end of this period knee was painful, no swelling, ROM 0/120 deg., Lachman +, posterior drawer test 0, jerk and pivot shift 0 and she has no subjective giving way of her left knee. We conclude that in case of congenital absence of booth crutiate ligaments, and after presenting subjective instability and knee pain, reconstruction of the ACL and PCL is indicated.

Abstract no.: 29525

**IDIOPATHIC SCOLIOSIS DEFORMITIES DIFFERENTIAL CORRECTION
AND STABILIZATION OPPORTUNITIES**

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The aim was to determine the correction and stabilization effectiveness for IS spinal deformities. 2006 patients 4-17 y.o. with IS major arcs 5°-160° were analyzed; arc of 10° was in 303 cases, 11°-25° - 327, 26°-40° - 645, over 40° - 731. Observation period was 3-15 years. Methods: therapeutic gymnastics (all 2006 patients), brace treatment (976 people 6-17 y.o., active spine growth, with arcs 18°-160°; Chêneau type brace used; treatment duration 3-12 years with brace cancellation after spine growth end), Surgery (412 patients were operated by the Cotrel-Dubousset method at the age of 15-20 years, in 89 patients previously brace treatment was held). Results: Therapeutic gymnastics had an effect in deformities to 10° in 71,3% cases, with 11°-25° - to 58,4%, at 26°-40° - in 26,8% and over 40° - in 15,3%. Brace correction was 15-145% during the first 3-6 months. Later in a brace, it could hold, increase, decrease. In 417 patients with arcs above 40° brace allowed to postpone the surgery until the spine growth end. In 102 observations with initial arcs of 41°-71° brace completely eliminated the surgery because the arcs have been steadily reduced by 12°-58°. Postoperative correction was 32,0-94,1% with 41°-68° arcs decrease. Conclusions: Therapeutic gymnastics is appropriate in growing patients with deformities to 20°. At deformities of 20° or more growing spine should be brace-treated. Surgical treatment is optimal only at the spine growth final stage.

Abstract no.: 29531

PREDICTION OF PATIENTS OUTCOME FOLLOWING NECK OF FEMUR FRACTURES USING THE 'NECK OF FEMUR COMPLEXITY CLASSIFICATION'

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Introduction: Orthogeriatric assessment identifies elderly patients with hip fractures needing medical optimization. Combined Orthopaedic and Orthogeriatric input improves patient outcome. The aim of the study is to assess patient outcomes according to the 'NOF Complexity Classification' and to review if this classification predicts prognosis.

Methodology: Prospective analysis of 273 patients with a Neck of Femur (NOF) fracture (June 2008-June 2009); 219 females and 54 males were included with a mean age of 81 years. Following a preoperative combined Orthopaedic Orthogeriatric assessment, patients were stratified into 4 grades, according to medical condition and fracture complexity; C0: systemically well with simple fractures, C1: systemically well with complex fractures, C2: systemically unwell with simple fractures and C3: systemically unwell with complex fractures. Complex fractures were defined as; pathological fractures or comminuted extra-capsular fractures (3part) or subtrochanteric extension or reversed obliquity. The outcomes measured were the 30-day mortality, 1-year mortality, door-to-theatre time and the length of hospital stay. **Results:** Mortality was 4.4% at one month and 19.4% at one year after surgery. Statistically significant results showed patients with grades C2 and C3 to have higher 30-day mortality ($P = 0.015$). 35% were operated on within 24 hours, and 82% within 48 hours. The mean length of hospital stay was 23 days, with no difference between NOF complexity classification grades. **Conclusion:** The 'NOF Complexity Classification' predicts 30-day and 1-year mortality. Combined Orthopaedic and Orthogeriatric assessment allows stratification of resources; identification of patients in need of rapid preoperative optimization, an experienced surgeon and enhanced rehabilitation.

Abstract no.: 29532

THE ROLE OF ABDUCTION BRACE IN PONSETI METHOD

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[Introduction] We retrospectively reviewed the abduction brace usage and evaluated how the usage affected the final results in Ponseti method. [Patients and Methods] 110 congenital clubfeet in 77 patients have been treated by Ponseti method and 103 feet in 73 patients that were followed until walking age were included in this study. The right side was involved in 26, left in 17, and bilateral in 30 patients. 57 patients (80 feet) were male and 16 patients (23 feet) were female. Average age at final follow-up was 5.8 years. The relationship between tolerance for abduction brace and recurrence were analyzed. [Results] 27 feet (20 patients) were still kept in the brace at final follow-up. 36 feet (25 patients) had finished the abduction brace when the patients were 4 years of age. After finishing abduction brace, 4 feet (3 patients) required posteromedial release operation because of the recurrence and 6 feet (4 patients) underwent anterior tibial tendon transfer. In 40 feet (28 patients), they abandoned abduction brace before 4 years of age because of poor tolerance. Among them, 12 feet (8 patients) underwent posterior or posteromedial release operation. Five feet (4 patients) underwent anterior tibial tendon transfer. Fourteen feet (10 patients) showing in-toeing gait were being followed conservatively. [Conclusion] Abduction brace was important for maintaining the good position of the feet that were acquired with Ponseti method.

Abstract no.: 29533

RISK FACTORS FOR FALLS AND THEIR ECONOMIC IMPACT IN AN ELECTIVE ORTHOPAEDIC SETTING

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Aim: Falls in orthopaedic patients lead to injury, prolonged hospitalisation and delayed rehabilitation. There is major economic burden associated with this. Methods: A Prospective cohort study with a historical control group was performed looking at falls before and after implementation of a Falls Prevention Program (FFP). A cost analysis of the intervention was then undertaken. Patient data and fall-incident report data were reviewed to identify fall-related injuries and related costs. Results: A total of 415 falls occurred over a 5 year period pre-intervention. The fall rate of 3.49/1000 bed days pre-intervention was significantly higher than post-intervention (2.68/1000 bed days). There was a significant decrease in falls relating to elimination ($p=0.0025$). 85 falls occurred in the 12 months pre-intervention. 15.29% (13/85) of falls resulted in minor injuries, and 9.42% (8/85) resulted in major injuries. The total cost incurred during this period as a result of falls was €84,285.74. Over 95% of total costs related to patients who sustained a hip fracture. The total cost of implementing the FFP was €11,234.25. In the 12 months post-intervention, 52 falls occurred. 25% (13/52) of falls resulted in minor injuries, and 5.76% (2/52) resulted in major injuries. The total costs accrued during this period as a result of falls was €510.60. Conclusion: Following the implementation of a FPP the incidence of falls and consequent costs decreased significantly. The large proportion of saving results from preventing hip fractures.

Abstract no.: 29536

TREATMENT OF UNSTABLE INTERTROCHANTERIC FRACTURES

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The purpose of this study was to retrospectively analyze and compare the result of proximal femoral nail (PFN) over dynamic hip screw (DHS) in treating an A22, 23 AO/OTA intertrochanteric fracture. Of 100 patients who had an A22, 23 unstable intertrochanteric fractures, 50 patients were treated with DHS (Group I) and 50 patients were treated with PFN (Group II). Both groups were compared in age, gender, preoperative morbidities, intraoperative data (type of anesthesia, duration of the operation, the amount of blood transfusion, the position of implant) and postoperative functional status and complications. The mean duration of operation was shorter in PFN group ($P=0.03$). The amount of transfusion was comparable. Intraoperative complications comprised a femoral shaft fracture in PFN group, cut-through of lag screws that occurred in one patient for each group, and loss of reduction that occurred in one hip in DHS group. There were no significant differences in the union time, postoperative morbidities or mortalities. The mobility score was higher in PFN group than in DHS group ($P=0.02$) though social function score was similar. The use of PFN has advantage in shorter operative time and better mobility of the patients while not altering overall course of patients' recovery.

Abstract no.: 29537

THE CORRELATION OF THE RADIOLOGICAL PARAMETERS OF HIP DYSPLASIA AND PROXIMAL FEMORAL DEFORMITY IN CLINICALLY NORMAL HIPS OF A KOREAN POPULATION

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The purpose of this paper was to investigate the association of the radiological parameters of hip dysplasia and proximal femoral deformity with the physical parameters in a clinically asymptomatic Korean population. 428 consecutive patients who were without any clinical evidence of hip OA and who underwent AP pelvic radiography in the supine position for hip contusion or a routine health check were analyzed for the relationships between the CE angle, the acetabular depth, the acetabular angle, the head-neck ratio and the neck-shaft angle and the relationships of the above-mentioned variables with age, gender, body height and the BMI. The CE angle, the acetabular depth and the acetabular angle were all strongly correlated among themselves. The neck-shaft angle and the head-neck ratio showed no correlation between themselves or with the CE angle, the acetabular depth and the acetabular angle. Age was correlated with the CE angle and age was inversely related to the acetabular angle. Height was significantly related to the acetabular depth. The BMI was inversely correlated with the head-neck ratio. Male gender was inversely correlated with the acetabular angle and it was positively related with the neck-shaft angle. Our study showed that the radiological parameters of hip dysplasia are all strongly, if not perfectly, correlated. Several physical parameters and aging too are correlated with the radiological parameters of hip dysplasia or proximal femoral deformity.

Abstract no.: 29538

THE USE OF TRANEXAMIC ACID IN LOWER LIMB ARTHROPLASTY

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Tranexamic acid has been of interest recently, particularly in lower limb arthroplasty surgery. Current literature estimates up to fifty percent of such patients require a blood transfusion and the relative risk of blood transfusion with using tranexamic acid is 0.47. The primary aim was to identify the frequency of blood transfusion in patients undergoing lower limb arthroplasty. The effect of tranexamic acid on perioperative blood loss was also investigated. A retrospective review of patients who received tranexamic acid intraoperatively was conducted. Thirty nine arthroplasties in 38 patients between January and May 2010 were identified. The preoperative and postoperative day one haemoglobin (Hb) was compared and the mean drop in Hb was calculated. There were 17 total knee arthroplasties (TKA) in 16 patients, 18 total hip arthroplasties (THA) in 18 patients and four revision arthroplasties in four patients. Blood transfusion was required in five out of 39 arthroplasties (12.8%). These were four patients who had THA (22.2%) and one patient who had revision surgery (25%). A local audit conducted on patients who had THA without tranexamic acid identified 37.5% of patients required a blood transfusion. This meant that the relative risk of blood transfusion after THA with the use of tranexamic acid was 0.59. This study shows the potential benefits of the intraoperative use of tranexamic acid in lower limb arthroplasty surgery with a relative risk which is comparable to that found in current literature.

Abstract no.: 29539

EARLY EXPERIENCE WITH THE USE OF DABIGATRAN FOR THROMBO-PROPHYLAXIS FOLLOWING TOTAL HIP AND KNEE JOINTS REPLACEMENT

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INTRODUCTION: Subcutaneous heparin injections as thromboprophylaxis have been used extensively following elective total hip (THR) and knee replacements (TKR). Recent introduction of direct-thrombin-inhibitors such as dabigatran offers both oral administration and freedom from blood level monitoring. We report our experience of its use. **METHOD:** Over three months, 101 patients who underwent unilateral primary THR (n=42, 41.5%) and TKR (n=49, 48.5%) were followed-up prospectively at the Kettering general hospital, UK. Inpatient wound complications such as leakage, infections, blisters and haematoma formation were checked daily. Post-operative drop in haemoglobin, gastrointestinal bleeding and length-of-hospital-stay were also recorded. Wounds were reviewed at 6-weeks. Thrombo-embolic events within one year post-operatively were recorded. **RESULTS:** 17(40.5%) hips and 7(14.3%) knees had wound leakage. Microbiology swabs were positive for two hips; both treated with antibiotics. 6(14.3%) hips and 6(12.2%) knees had blisters. One hip and 2 knees developed haematomae; none required surgical evacuation. By 6 weeks all have healed satisfactorily. For THR, 40(95.2%) had a haemoglobin drop of >2g/L; 9(19.5%) required blood transfusion. For TKR, 39(79.6%) had a similar drop, only 1(2%) required transfusion. There was no recorded gastrointestinal bleeding. Mean lengths of hospital stay were 7.4(THR) and 6(TKR) days. No thrombo-embolic events were recorded. **CONCLUSION:** Our use of dabigatran following THR and TKR shows that despite high rates of wound leakage and haemoglobin drop, mid-term outcome is satisfactory and comparable to other published studies.

Abstract no.: 29542

BIOLOGICAL FACTORS IN SRI LANKAN FRACTURE NECK OF FEMUR PATIENTS

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Bone mineral density leading to fracture neck of femur varies according to biological and ethnic factors. The practice of comparing Asian population with Caucasian figures may lead erroneous conclusions. Objectives: To estimate bone mineral density and fracture threshold in Sri Lankan Fracture neck of femur patients and to correlate with western and Asian figures. Methodology: Descriptive cross sectional analysis on biological data with a questionnaire and survey among patients with fracture neck of femur for a period of 01 year. Figures were compared. Results: There were 82.9% females and 17.1 %males. Prevalence of osteoporosis was 77%, osteopenia was 11.4%, 7.6% had a pathological bone disease. Mean BMI is 22.10 (SD 3.786) which will be compared with regional and western studies. Relationships between (Bone Mineral density) BMD and age, corrected serum Calcium, Phosphorus, and (Body Mass Index) BMI were evaluated. Mean BMD of fracture population was 0.60 g/cm² (SD 0.154, N 98) compared with different ethnic groups. There was a statistically significant difference between the BMD of the spine and femoral neck. Deviation of the BMD from the (World Health Organization) WHO reference values was assessed. Conclusions: There were significant differences between Sri Lankan and Caucasian reference data of WHO. In determining the BMD, requirement of data according to ethnic and biological backgrounds was emphasized.

Abstract no.: 29548

**A NEW CLINICAL SIGN TO DIFFERENTIATE BETWEEN POSTERIOR
INTEROSSEUS NERVE AND SUPERFICIAL EXTENSOR MUSCLE INJURY
IN PROXIMAL FOREARM LACERATION**

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Cut injuries over the dorsum of the proximal forearm are common in assaults and road traffic accidents involving extensor muscles and sometimes posterior interosseous nerve (PIN), making it difficult to differentiate their involvement. We are presenting a clinical sign to differentiate nerve injury from muscle injury. Seven patients presented to us with cut wounds over the dorsum of proximal forearm with inability to extend ulnar three fingers at metacarpophalangeal joint. On exploration, lacerations were involving the common extensors in different depths, but not deep enough to involve PIN. 40 upper limb cadaveric specimens were dissected and determined the distance of branching of the posterior interosseous nerve and the level of origin of extensor pollicis longus and extensor indicis. In cases of lacerated wounds in the proximal third forearm extensor aspect (within 10cm from lateral epicondyle), the extensor muscle injury can be easily differentiated from PIN injury by absence or presence of finger drop of thumb and index finger along with other fingers respectively. Ulnar three fingers drop alone indicates isolated superficial extensor muscle injury and all fingers drop indicates PIN injury.

Abstract no.: 29549

LONG-TERM OUTCOMES OF POSTEROLATERAL FUSION WITH FACET JOINT FUSION FOR GRADE 1 SPONDYLOLISTHESIS: 5- TO 13-YEAR FOLLOW-UP

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(Introduction) Pedicle screws increase the fusion rate and improve the long-term results of posterolateral fusion (PLF). Facet joint fusion is a low-cost, less invasive procedure. This study evaluated the long-term outcomes of PLF with facet joint fusion for low-grade spondylolisthesis. (Methods) Eighty-two patients with grade 1 spondylolisthesis (mean follow-up period, 111.5 months) underwent PLF with facet joint fusion. The clinical results were evaluated using the Japanese Orthopaedic Association score (JOA score). Operative time, blood loss, and radiological examinations were studied. Thirty-two patients who underwent noninstrumented PLF acted as controls. (Results) The mean operation time was 121.1 minutes, and blood loss was 174.5 ml. The average JOA score (maximum, 29 points) was 14.6 preoperatively; it improved significantly at 1 year (25.0, recovery rate 73.9%, $P<0.0001$) and was maintained at final follow-up (25.1, 74.8%, $P<0.0001$). The recovery rate of controls was 72.3% 1 year postoperatively, but 68.7% at final follow-up. On radiological examination, %slip was 15.5% preoperatively; it increased to 19.6% 1 year postoperatively and was 20.3% at final follow-up ($P<0.0001$). The PLF fusion rate was 82.7% using iliac bone and 34.5% using local bone. There was no significant relationship between PLF fusion status and the JOA score recovery rate. (Conclusions) For grade 1 spondylolisthesis, PLF with facet joint fusion had good long-term outcomes, regardless of fusion status. For economic, technical, and biomechanical reasons, this procedure is recommended.

Abstract no.: 29550

**CORRECT USE OF SYNDESMOYSIS FIXATION IN ANKLE FRACTURES.
FUNCTIONAL OUTCOME RELATED TO QUALITY AND TYPE OF
TREATMENT.**

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The management of injury to the distal tibiofibular syndesmosis remains controversial in the setting of ankle fractures. Operative fixation usually involves the insertion of a screw in patients with syndesmotic injury. The use of fixation is used to accomplish accurate reduction of the syndesmosis, which is associated with the best functional outcomes. Injuries with persisting tibiofibular diastasis after reduction require operative syndesmotic fixation. Screw removal is done in all patients, preferably before start weight-bearing. Study designed to evaluate the quality of treatment and outcome in patients with syndesmotic injury in our institution. A retrospective, transversal, study evaluating the correct use of syndesmotic fixation and its functional outcome was done in a one-year period. All ankle fractures in adults treated surgically in 2009 were reviewed. Age, Weber and AO classifications, measurement of radiological parameters, syndesmotic fixation, and timing of screw removal prior to weight-bearing were recorded. Patients with medial and/or syndesmotic repairment were compared. Radiologic analysis included tibiofibular clear space, tibiofibular overlap, and medial clear space. Thirty patients (mean age44.3) with ankle fractures were treated surgically. According to the AO-Weber classifications A-5, B-18 and C-7. Nineteen patients were treated with tricortical syndesmosis fixation with screws, eighteen had medial reparation. Time of removal was 26 to 462 days (mean56). Two patients had complications related to technique: loosening of fixation, non union and malalingment, requiring further surgical management. The functional scales were applied three and six months after surgery, showing better outcomes in those patients receiving early weight-bearing and joint motion.

Abstract no.: 29553

FEMORAL LENGTHENING IN CHILDREN

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Aim: To analyse the results of lengthening of femur in the period 2000-2009 concerning especially the healing rate, complications and failures. Material and methods: 28 femoral lengthening in 26 pts, 16 girls and 10 boys. External fixators Mefisto 24x, Orthofix 3x, Prospion 1x. In most pts congenital short femur. Age at start of lengthening 11 yrs (4-16 yrs). Complications were stratified on moderate, severe and critical (Dahl). Results: Average lengthening 40,2 mm (SD +-11,1), osteotomy index-height of osteotomy (OI) 41 % (SD +- 9,8), lengthening percentage (LP) 10,9 % (SD +-3,8), lengthening index (LI) 14,5 days/cm (SD +-3,5), healing index (HI) 52,6 days/cm (SD +-20,1), consolidation index (CI) 93,3 days/cm (SD +- 40,0). Complications: moderate 11 (39,2%), severe and critical 8 (28,6 %). 14 pts (53,8 %) without complications. Two complications in 5 pts (17,9%). Lengthening percentage versus number of complications statistically significant ($p= 0.019$). Healing index versus age, resp. gender not statistically significant ($p=0.836$, resp. $p=0.546$ in Mann-Whitney test). Osteotomy index (height of osteotomy) versus healing index statistically not significant ($p=0.492$) as well as type of osteotomy (oscillation saw or corticotomy) versus complications ($p=1.000$ in Fisher exact test). Correlations of lengthening index and healing index statistically significant ($p<0.001$ in Spearman correlation test). Conclusions: Presumption of first author, that slower start of lengthening will positively influence the healing was abandoned.

Abstract no.: 29554

**DELAYED SUPERFICIAL FEMORAL ARTERY PSEUDOANEURYSM
FOLLOWING DISTAL FEMORAL-SHAFT FRACTURE: A CASE REPORT**

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A 69-year-old man presented with an expanding tissue mass over the medial aspect of his left thigh 6 weeks after a fracture of the distal femur shaft. Imaging studies confirmed a rare traumatic pseudoaneurysm of the superficial femoral artery. For the massive hematoma and persistent exsanguinating hemorrhage, staged interventions were taken. First, the pseudoaneurysm was hemodynamically isolated with an endovascular stent-graft placement. Subsequent surgical exploration and aneurysmectomy were performed later for the evacuation of the formed hematoma and the relief of the resultant compressive symptoms. Because traumatic pseudoaneurysm can have an insidious onset and delayed presentation, surgeons should consider the possible complication even after initial fracture fixation.

Abstract no.: 29556

COMPARISON OF PREOPERATIVE AND POSTOPERATIVE SPINAL MOBILITY WITH CLINICAL AND RADIOLOGICAL OUTCOME FOLLOWING CEMENT AUGMENTATION

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Introduction: Randomized controlled trials put the clinical effectiveness of vertebro-/kyphoplastie (BK) for pathologic vertebral body fractures VCF into question. The aim of this study was to quantify the range of motion (ROM) using a non-invasive, radiation-free measurement method compared with clinical and radiological parameters before and after BK. **Methods:** 30 patients (\varnothing age: 68 years, ♀:♂=14:16) with 54 symptomatic pathological VCF (T6-L5) treated by BK were included (\varnothing fracture age: 24 days). The clinical results were recorded by VAS, SF36/Roland Morris score and ODI pre-, 2 days, 12 weeks postoperative. Kyphosis angle (KW) and sagittal index (SI) of the VCF were determined with standardized planar X-ray before and after BK. The amplitude and speed of ROM was measured by an external sensor system (SpineDMS). Its validity/reliability was previously verified in comparison to the established Vicon system. **Results:** VAS and quality of life parameters improved significantly immediately after BK ($p <0.001$) and after 12 weeks ($p <0.001$). Radiological parameters also showed significant improvement. The total ROM was significantly changed after 12 weeks in amplitude and speed, both in flexion ($p<0.001$) and in extension ($p<0.001$). Significant correlations were observed between changes in ROM and changes in clinical and radiological scores. **Conclusion:** Patients treated by BK for pathologic thoracolumbar fractures showed a good outcome underlined by clinical and radiological scores. In turn, this outcome is correlated to better patients' mobility and postoperative quality of life.

Abstract no.: 29558

THE SYSTEM OF COMPLICATIONS PREVENTION AFTER FUNCTION-RECONSTRUCTIVE OPERATIONS ON THE ELBOW

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The analysis of outcomes of elbow injuries treatment shows that up to 60% of patients require function-restorative operations because of the persistent restriction of ROM in the joint. However, operative treatment doesn't lead to success in all the patients. The cause of unsatisfactory result can be following complications of postoperative period: hematoma, scaring, heterotopical ossification of paraarticular tissues, instability, neuropathy and pain syndrome. We use the system of complications prevention after elbow surgical treatment, which was used in 83 patients. For drainage of postoperative wounds we use modified drainage tubes. To reduce the risk of synovial fistules formation, we introduce the drainage tube out of the operative wound with formation of the long tunnel in the soft tissues. To prevent heterotopical ossification of paraarticular tissues, together with NSAID, we apply cytostatics and perioperative radiotherapy. In prophylaxis of joint instability after surgical mobilization, we perform transarticular fixation of humeral-ulnar and humeral-radial joints with wires or apply hinge apparatus of external fixation. To prevent neuropathy and pain syndrome, we create soft tissue bed for ulnar nerve, which is mobilized from scars with disconnection from the joint surfaces and capsular-ligament apparatus. In deficit of soft tissues we perform resection of medial epicondyle. Early kinezotherapy is indispensable condition of good functional result. We use original functional splint, which provides the variety of regimes of motions. Our system of postoperative complications prevention allowed the achievement of good and excellent results in 64 from 83 patients (77%).

Abstract no.: 29559

PONSETI TREATMENT RESULTS IN IMMEDIATE CHANGES IN DEFORMED ANLAGEN TOWARDS MORE NORMAL SHAPE AND POSITION - A MRI STUDY

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This study examines the hitherto unknown events that occur within tarsal anlagen during Ponseti clubfoot treatment. Six infants with unilateral clubfeet undergoing Ponseti treatment were investigated with a new MRI protocol to assess the effect of time and load on anlagen shape and position. The clubfoot was imaged each week in casts applied: i) the week before, ii) unstressed, and iii) stressed. Images obtained were segmented and data was analyzed to obtain 3D renderings of ossific nuclei and cartilage. We determined anlagen and ossific nuclei shape and position changes, and growth rates. Findings show that: i) Manipulation of the infant clubfoot results in immediate changes in deformed anlagen towards more normal shape and position; ii) Casting leads to little further shape or position change; & iii) Ponseti treatment increases rates of chondrogenesis and osteogenesis in clubfoot tarsal anlagen.

Abstract no.: 29560

THE EFFECTS OF DIFFERENT INTER-MALLEOLAR DISTANCE ON RADIOGRAPHIC MEASURES OF LOWER LIMB ALIGNMENT

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Orthopedic procedures of lower limbs typically require full-length standing radiographs. Many efforts had been taken to maintain a standardized position; however, effect of magnitude of foot separation on the radiographic alignment of lower extremity has not well documented. We conduct a prospective study on 11 young male (aged from 25~40 years) without major trauma over their lower extremities. Three sets of radiographs with different foot separations (foot contacted, open as the half width of shoulder and as open as whole shoulder width) were obtained from each participant. Mechanical axis angle (MAA) and axis deviation (MAD) of the lower extremities were measured and analyzed (ANOVA). After comparison, no significant differences in MAA and MAD were found between positions with different foot separation ($p>0.05$). We conclude as long as the patella and the second toe were maintained facing forward, different foot separation has little effect on the measured alignment from long standing radiograph.

Abstract no.: 29562

**CORRECTION OF WRIST DEFORMITY FOLLOWING HAND
REPLANTATION**

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INTRODUCTION: Replantation of the major parts of extremity with wide injury zone is very complicated procedure. Because of the wide zone of destruction, possibilities of successful replantation are very limited. Even when successful replantation is achieved, there are significant deformities, residual disorders and shortening. The expected deformity after the replantation is often enough to discourage both surgeon and patient.

AIM: To present our experience in correction of deformity and shortening following hand replantation in case when there was partial destruction of wrist and distal forearm. **METHOD:** Replantation of complete amputated hand with major distal forearm damage and shortening of 13 cm. The Ilizarov apparatus was applied six months after the replantation to correct the forearm shortening, residual ulnar wrist deviation of 450 and wrist flexion of 400.

RESULTS: Forearm elongation of 8 cm, complete correction of ulnar deviation and positioning of the wrist in 150 of dorsiflexion. Neurological and functional recovery was observed.

CONCLUSION: The "shorten and then distract" concept in the treatment of the most difficult mutilant injuries provides for salvage of the extremity and anatomical integrity, functional recovery and acceptable aesthetic result. Application of Ilizarov apparatus enables deformity correction and restoration of all tissues without the need of transplantation and donor site morbidity. Ilizarov apparatus is minimally invasive with rare complications that are easy to correct. Amputated extremity can be replanted through major shortening (up to 13 cm), which can be later corrected by Ilizarov apparatus. In that way we can achieve good final functional and aesthetic result.

Abstract no.: 29564

METHOD IN HEALING OF DIFFICULT EXTREMITY INJURIES

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INTRODUCTION: Extremity injuries, type IIb and IIc, semiamputations and amputations are very complex. Treatment which aims to save the extremity is challenging. Treatment should include circulation restoration, structure reconstruction, tissue defects compensation and making conditions for fracture healing. In cases of injuries with wide destruction zone, extensive debridement is necessary, after which there is residual extremity shortening. In such cases, microsurgery enables extremity salvage and shortening that can be later corrected by Ilizarov distractrice osteogenesis. **AIM:** The aim of this work is to show the clinical examples in which microsurgery afforded extremity salvage and Ilizarov technique enabled restoration of extremity lenght, bone defect reconstruction and fracture healing. **METHOD:** Segmented destructive injuries of the extremity, treated by microsurgery and Ilizarov technique, were analised by type of the injury, by extremity damage, by microsurgical procedure and other reconstructive procedures initially applied and by type of Ilizarov technique applied in second phase of the treatment. **RESULTS:** We treated six patients: two with complete amputations and four with third-degree fractures. Elongation following replantation was done in two cases. Revascularisation and then application of compressive Ilizarov apparatus in one case and in three cases free microvascular flap and bone transport by Ilizarov. **CONCLUSION:** In treatment of severe extremity injuries, when the aim is anatomic and functional salvage of extremity, microsurgery and Ilizarov technique are complementery and expand indications for extremity salvage. In most severe cases these procedures seem to have no alternative.

Abstract no.: 29568

ARTHROSCOPIC ANTERIOR CRUCIATE LIGAMENT PARTIAL RECONSTRUCTION WITH PRESERVATION OF REMNANT BUNDLE BY MINIMALLY INVASIVE TECHNIQUE

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Object: We performed arthroscopic anterior cruciate ligament partial reconstruction with preservation of remnant bundle. The purpose of this study is to report and to discuss our technique and that result. **Methods and Results:** In 5 patients (male 3, female 2, mean age 21.4 years old), the arthroscopic anterior cruciate ligament partial reconstruction was performed with double bundle semitendinosus tendon auto graft. All patients were incomplete rupture cases, either anteromedial bundle or posterolateral bundle. In 2 cases, anteromedial bundle was reconstructed with preservation of posterolateral bundle, in 3 cases; posterolateral bundle was reconstructed with preservation of anteromedial bundle. On the femur side, the auto graft was fixed by Endobutton CL, and on the tibia side, fixed by Double Spike Plate and screw. One year after the operation, all cases were performed by re-arthroscope, and removed the fixation plate and screw of the tibia. The mature reconstructed bundles were observed by arthroscope. All patients returned to sporting activities and were no obstacle in daily life. **Discussion:** Arthroscopic anterior cruciate ligament partial reconstruction with preservation of remnant bundle showed an excellent result as well as two bundle reconstruction. To preserve remnant bundle preserves the anterior cruciate ligament remnant's neural elements and mechanoreceptors, also naturally recovery are promoted. In addition, this procedure can prevent of tibial tunnel elongation by synovial fluid leakage, and keep the blood supply from surrounding synovium. Partial reconstruction with preservation of remnant bundle is simplicity procedure, and more minimally invasive method.

Abstract no.: 29570

BONE MINERAL DENSITY AND FRACTURE RATE IN RESPONSE TO INTRAVENOUS PAMIDRONATE IN PATIENT WITH TIP I OSTEOPENESIS IMPERFECTA

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Osteogenesis imperfecta (OI) is a genetic disorder characterized by fragile bone and reduced bone mineral density. The objective of this study was to analysis the effects of pamidronate treatment on bone mineral density and fracture rate. Eight patients [7 male (87.5%), 1 women (12.5%)] who received intravenous pamidronate with tip I OI were included in this study. The intravenous dose of pamidronate disodium (Aredia, Novartis) was 0.75 mg/kg body weight administered every 3-6 months as a single dose over 8 hours in saline solution. Bone mineral dencity was measured before and after the treatment by a dual energy X-ray absorptiometer at the L1 to L4 vertebral bodies. Bone mineral density (g/cm²), T score and Z score values and number of fractures were recorded. The patients mean age at the time of treatment was 14.9 years (range, 13-18 years), the mean BMI was 20.16 kg/m², the mean follow-up period was 29.5 months (range, 2-72 months. The mean bone mineral density, T score and Z score increased from 0.39 to 0.65 (p=0.01), from -5.71 to -3.95 (p=0.02), from -5.15 to -4.17 (p=0.09), respectively. The mean numbers of fracture decreased from 0.57 to 0.39 per year (p=0.48). In conclusion, intravenous pamidronate in patient with OI increased bone mineral density and improved fracture rate. Pamidronate is a safe and effective treatment method in patient with OI.

Abstract no.: 29572

DEVELOPMENT OF SEVERE L3-L4 INSTABILITY

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Case history: A twenty-two-year-old woman suffered translation fracture T10 - T11 with transverse spinal cord lesion, in a car accident in October 1991. Because of deep-vein thrombosis, immediate surgery was not possible; therefore, halo-femoral traction was applied for 5 weeks. During that immobilization bilateral hip ankylosis developed due to heterotopic ossification (HO). She underwent posterolateral fusion of T7 to T12 with transpedicular fixation in December 1991. In 2008 the first signs of L3-L4 translation instability appeared due to long hip immobility. This progressed to complete retrolisthesis at L3-L4 producing a severe kyphotic gibbus. In March 2010 two heterotopic hip bones of about 15 cm by 8 cm were excised. In July 2010 posterolateral fusion of T12 to S1 with transpedicular fixation was performed, avoiding L4 that was surrounded by a pseudomeningocele. One week later L3-L4 anterior fusion, using tibial allograft and a short screw/rod system, was carried out. The liquid resembling cerebrospinal fluid detected by MRI between L3 and L4 did not communicate with the dural sac. Radiographic parameters in a sitting position before / after surgery were as follows: total lumbar lordosis T12-S1, +38° / -70°; segmental lordosis L3-L4, +45° / -35°; slip L3/L4, -100% / 0%. Sitting height increased by 17 cm. Conclusion: Microtrauma to the muscle fibers during halo-femoral traction was the most likely cause of HO development. The heterotopic bone tissue was not firmly attached to the hip articular capsule. Histologically, it was a mature bone with trilineage hematopoiesis with no signs of malignancy.

Abstract no.: 29574

TOURNIQUET-ASSOCIATED CHEMICAL BURN-REVISITED

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Pneumatic tourniquets have been commonly utilized during orthopedic extremity surgeries for creating a bloodless field and facilitating operative procedures. Chemical burn under pneumatic tourniquet caused by povidone-iodine is an iatrogenic injury and is rarely reported in the literature. The basic mechanism involves irritation coupled with maceration and pressure. Our painful experience with two illustrative patients who presented with iatrogenic tourniquet-associated burn following exposure to povidone-iodine (betadine) is described.

Abstract no.: 29576

IS THE K-WIRE FIXATION ENOUGH FOR PROKSIMAL METATARSAL OSTEOTOMY IN YOUNG AGE GROUP WHO HAS HALLUX VALGUS?

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We reviewed efficiency of the K-wire fixation which we used for proximal metatarsal crescentric osteotomy in soldier who has hallux valgus. Sixteen male patients operated in 2009 because of severe hallux valgus deformity were reviewd. Mean age was 21 and mean follow-up was 7.1 months (4-12). Fluoroscopy was used to determine the tarsometatarsal joint and 15 mm incision was made on the dorsal surface of the first metatarsal. Periosteum of the metatarsal was never stripped and after several drilization of the osteotomy site with using 1.5 mm drill, osteotomy was completed with curved osteotom. The medial break of the proximal part of the metatarsals was cut by rounger to get severe correction. It is checked by fluoroscopy and fixed two K-wire of 1.5 mm. One of them was pointed from dorsal surface of the distal osteotomy to the medial cuneiform. Other one was passed from the medial surface of the first metatarsal to the intermediate cuneiform. Both of them crossed the tarsometatarsal joint. Tips of the K-wires were bent and left beneath the skin. They were removed before the weigthbearing with stab incision using local anaesthesia at 6th weeks when radiologic evidence of union was seen on radiography. All osteotomy healed successfully until 6th week and there were no delayed union. Although the screws have better stability than K-wire, the results of this study confirmed that K-wire also can provide enough stability to union the osteotomy in young patients when we use meticulous surgical technique during osteotomy.

Abstract no.: 29577

DYNAMIC SONOGRAPHIC ASSESSMENT OF THE TALO-CRURAL AND SUBTALAR JOINTS IN CLUBFOOT FOLLOWING ACHILLOTENOTOMY

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Purpose: To by dynamic sonography investigate the effect of percutaneous Achillotendonotomy and the following bracing therapy regarding the motility in the talo-crural and subtalar joints. Background: After completion of the serial castings according to the Ponseti method there is often a residual equinus deformity that in 80-90 % has to be corrected surgically. The effect of the percutaneous Achillotendonotomy and the following treatment using a foot-abduction-orthosis (modified Dennis-Browne splint) regarding the position of the talus in the ankle mortise and the motility in the talo-crural and the subtalar joints has until now mostly been assessed clinically. Material and methods: Altogether 14 clubfeet in 9 children were investigated by ultrasound using a posterior projection. The posterior alignment of the tibia, talus and calcaneus was assessed in neutral position and at maximal dorsiflexion before Achillotendonotomy and at the age of 6 and 12 months. The unaffected side in 5 children with unilateral clubfeet were used for comparison. Results: At the 6-month control 9 of the feet showed a normalisation of the dorsal alignment of tibia, talus and calcaneus. At the age of one year all but one of the 11 hitherto investigated feet showed further improvement of the dorsiflexion ability. Conclusion: By dynamic sonography the motility in the talo-crural and subtalar joints can be visualised using a posterior projection. Thus the effect of percutaneous Achillotendonotomy and brace treatment regarding the correction of the equinus component of clubfoot can be assessed and followed sonographically.

Abstract no.: 29580

USING CONTRALATERAL HIP TO ADJUST THE LIMB-LENGTH AND FEMORAL OFF-SET

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Unipolar prosthesis such as Thompson and Moore prostheses impose various challenges in restoring the hip anatomy. They do not have commercially available template for adjusting the limb-length (LL) and femoral off-set (FO) such as in contemporary prosthesis. We described a method to restore the limb length and femoral offset by using the identical contralateral hip. Identicality of both hip is the major prerequisite for this technique. K-wire of 10 cm length is placed longitudinally over the mid-shaft of the proximal femur of the intact side. A radiography of the intact side is taken while the leg is 15 degrees internally rotated. In the next step a new ruler is created as long as the length of the K-wire on the radiograph by using a cardboard. New ruler is divided into 10 equal parts. Two parameters, lesser trochanter to center of the hip for LL and femoral offset (FO) which we need are measured by our new ruler on the same radiography by using the intact side. A real ruler is used intraoperatively. The remaining neck length (from lesser trochanteric sulcus to the fracture line) and length of the predicted prosthesis (from seat point of the prosthesis to center of the head) is measured. Total of this two measurements gives the LL. Despite some limitations this technique can be used in many patients to restore normal hip biomechanics.

Abstract no.: 29582

REVASCULARISATION OF AN AUTOCLAVED OSTEOSARCOMA TUMOUR BONE GRAFT: A CASE REPORT WITH FOLLOW-UP OF 4½ YEARS

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This is a case report of a stage IIB osteosarcoma of proximal tibia in a 15 year. The tumour was treated by en bloc resection of the tumour with wide margins. The resected length of tumour was 15 cm. After removal of soft tissue and cartilage, the resected bone segment was autoclaved for 5 min at 132° C and 29 pounds per square inch pressure (0.2 mega Pascal). The residual defect was reconstructed with resected autoclaved tumour bone graft. The tumour bonegraft was fixed with interlocking long nail (9x75 mm). Soft tissue defect was reconstructed with medial gastrocnemius myoplasty and split skin grafting in same sitting. After a month of surgery, patient was given 6 cycle of chemotherapy at 3 weeks interval and followed by 5000 rads radiation at local part. Tc bone scan 4 years after surgery showed revascularization of resected tumour bone graft. The last follow up after 4 and half years showed no sign of local recurrence. This girl is doing her all activities including sports and dance. This method of reconstruction using an autoclaved tumour bone graft is useful in countries where facilities for allograft or tumour prostheses are not available due to financial, technical or sociocultural reasons.

Abstract no.: 29587

ONCOSURGICAL MANAGEMENT OF LOCAL MONO-/MULTISEGMENTAL TUMOR RECURRENCE OF THE SPINE BY EN-BLOC-EXCISION

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Introduction: Intralesional resection of malignant spinal tumors present with limited outcome. In case of previously performed surgery the technique of en-bloc-spondylectomy (EBS) allows to achieve sufficient margins. Objective of the study was the analysis of oncosurgical results for local spinal recurrences by EBS
Methods: 10 patients (w/m: 4 / 6, age 50.4 years) with local tumor recurrence after sarcomas/ solitary metastases were investigated retrospectively. Patients`staging evidenced no further lesions. All patients underwent an intralesional resection 18 months before. The resection was performed as mono-/multisegmental EBS (1x1, 3x2, 4x3, 2x4, thoracic/ lumbar: 8/2) with resection of involved neighboring structures in 4 patients (2xlung, 2xchest wall). Defect reconstruction was performed using pedicle screw-rod systems and carbon-composite-VBR-systems.
Results: 3 wide and 6 marginal resections were achieved. Due to spinal canal involvement one case showed R1 resection. The mean ICU stay was 3 days. In 6 patients (2 minor/4 severe) complications occurred. In 9/10 patients no new neurological deficit occurred (one case of spinal cord ischemia). At follow-up of 15 months, 8 patients showed no evidence of disease while 1 patient presented with a local tumor recurrence and another with pulmonary metastases. There was no evidence for implant loosening or failure.
Conclusion: To achieve wide resection margins in local recurrences following intralesional surgery of malignancies of the spine is possible by EBS. Though it is a demanding procedure with a high complication rate exact preoperative planning can result in acceptable overall risk and good oncosurgical outcome.

Abstract no.: 29592

**CLAVICULAR OSTEOMYELITIS FOLLOWING SUBCLAVIAN LINE
INSERTION**

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Despite modern surgical techniques and advanced antimicrobial therapy, osteomyelitis remains a difficult and challenging problem. Osteomyelitis of the clavicle is a rare condition that is difficult to diagnose. It has been reported secondary to hematogenous spread and as consequence of trauma. We report here a case of clavicular osteomyelitis secondary to placement of subclavian catheter in ICU. A 15 yr old boy presented with progressively increasing swelling over the clavicular region since last fifteen days. The swelling was boney hard and tender on deep palpation. There was history of low grade fever since the occurrence of swelling. Patient was admitted 2 months back in ICU as a case of Gullian Barre syndrome with respiratory paralysis. During monitoring he gives history suggestive of a subclavian line being inserted that was removed before discharge. The boy was investigated with x rays and CT scan which confirmed the diagnosis of clavicular osteomyelitis with presence of sequestrum. The sequestrum was removed and patient was put on antibiotics for 6 week following which the swelling reduced. At 6 month followup the scar had healed, there was no history of pain or fever although mild swelling was still present. The xrays showed that there was no sequestrum and good healing was present. The case is reported for its unique nature and discussion so that early identification of condition and appropriate management is ensured in timely fashion.

Abstract no.: 29593

MYOSITIS OSSIFICANS WITH BILATERAL EXTRAARTICULAR ANKYLOSIS OF THE HIP JOINT

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Myositis ossificans also known as heterotrophic ossification is the pathological presence of lamellar bone at sites where bone does not normally exists. Myositis ossificans is believed to be of unknown etiology and has been shown to occur after damage to muscle resulting in proliferation of the connective tissue and differentiation into the mature bone. We report a case of post traumatic myositis ossificans in a 37 year old male following head injury involving Iliopsoas muscle leading to extra articular bony ankylosis of both the hips and severe functional impairment. Extensive myositis ossificans leading to a complete extrararticular ankylosis is rare and the surgical excision of the mass as done in this case results in a significant functional improvement.

Abstract no.: 29594

MODIFIED PAUWELS' INTERTROCHANTERIC OSTEOTOMY IN THE MANAGEMENT OF FRACTURE NECK OF FEMUR WITH FAILED OSTEOSYNTHESIS

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Patients of femoral neck fractures with failed osteosynthesis present additional problems of osteopenia, bone loss, viability of head of femur, implant in situ and instability. We retrospectively reviewed the functional outcome of modified Pauwels' intertrochanteric osteotomy in 21 adults of femoral neck fractures (mean age, 47.2 years) with failed osteosynthesis between 1990 and 2008. Of 21 patients, eleven patients had lag screw fixation or a Dynamic hip screw and a plate; and ten had primary valgus intertrochanteric osteotomy. In the lag screw group, union was achieved in ten patients after modified Pauwels' intertrochanteric osteotomy (91%) and one had total hip replacement. In the osteotomy group (10 patients), union was achieved in five of the seven patients after revision osteotomy. Two had lag screws with fibular grafting and one had total hip replacement. Femoral head showed signs of viability in one of the three patients with preoperative avascular necrosis after osteotomy. Therefore, union was achieved in 15 of seventeen patients of failed osteosynthesis (89%) after osteotomy. Limb-length equalization was achieved in (80%) patients with near-normal gait. The average neck-shaft angle at the final follow up was 131.6 degrees. The minimum follow up was 2 years (mean, 7.9 years; range, 2-19 years). The average Harris hip score was 85.6 points and Merle d'AubignĂŠ-Postel score 14.3. We believe that modified Pauwels' intertrochanteric ostetomy is a reliable method to achieve healing in neglected femoral neck fractures with failed osteosynthesis. Coxa vara and shortening can be corrected simultaneously.

Abstract no.: 29595

THE SPINE IN SICKLE CELL DISEASE

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Basrah (South of Iraq) is considered as endemic area for sickle cell disease, with 15.2% of the population affected. Sickle cell disease is at a type of inherited haemoglobinopathy with adverse effect on the skeleton. Almost all patients at certain time, may show some bone changes. But other may show body system is not away from involvement. I have called 225 patients the symptoms related to the spine within two years. The asymptomatic spinal involvement was not included. (119) were of SF type while (106) were of the SS type. Age ranged between 25-53 years with male dominance (140) male, (85) female. (94) presented with low back pain (muscular), (79) were osteoporotic, (30) presented with tuberculosis, (20) with pyogenic infection, one presented with paraplegia due to thrombosis of anterior spinal artery. (209) showed fusion of sacro iliac joint. The diagnosis was reached via MRI, CAT, plain Xray, hematological study, and DEXA (Densitometry). The line of treatment will be discussed.

Abstract no.: 29600

MULTIDRUG RESISTANCE IN TUBERCULOSIS – A SERIES OF 20 CASES

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Multidrug resistance tuberculosis (MDR) is a challenge for diagnosis and treatment. We report analysis of 20 MDR TB spine cases. 20 TB spine patients of either sex, aged 21-53 years were treated from 2005-2010. They reported for persistence of clinical symptoms (n=10), appearance of a new lesion (n=4), reappearance of clinical disease (n=6) after being treated by complete ATT for 12 months (n=14), for two full course over last 3 years (n=6). The dorsal spine (8) dorsolumbar (6), lumbar (3) and lumbosacral spine (3) were affected. All were HIV negative, serum proteins were WNL. 19 were operated for anterior debridement. Tissue was sent for Gram's, AFB staining, Bactec culture, PCR and histopathology. Second line 6 drugs ATT regimen/INH/Rcin/PZA/ETB/Oflox/Ethionamide and cycloserene was started. The AFB smear was positive (4) but culture grew AFB resistant to INH, Rcin, PZA, Oflox in only one. PCR was positive in 17 while histology in 19 cases. The lesion healed completely on second line drugs in 10 cases at 18 months. The lesion has not healed in remaining 6 cases and 4 have short FU. The drug resistance could be proved in 5% cases only hence 95% could be labeled as "therapeutically refractory cases". The healing could be achieved by second line ATT.

Abstract no.: 29602

SCARF INJURY RESULTING IN IPSILATERAL HIP AND KNEE DISLOCATION

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Scarf forms a part of the traditional dress for females in the Indian subcontinent. Working near machinery, riding in a motorbike can result in entanglement of scarf in moving parts of machinery and subsequent injury. This can result in wide spectrum of injuries. We report one such injury caused by machinery equipment leading to ipsilateral closed posterior dislocation hip and open posterior dislocation knee with other injuries. Such a mechanism of injury leading to major joint dislocations in an ipsilateral limb is unreported in literature. Emphasis also must be given to the prevention of these kinds of avoidable injuries.

Keywords - Scarf, Ipsilateral, Dislocation.

Abstract no.: 29605

MODIFIED PAUWELS' INTERTROCHANTERIC OSTEOTOMY IN NEGLECTED FEMORAL NECK FRACTURES

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Various reported treatment methods do not always satisfactorily address nonunion, coxa vara, and limb shortening in neglected femoral neck fractures. We retrospectively reviewed the functional outcome of Modified Pauwels' intertrochanteric osteotomy in 58 patients with femoral neck fractures which remained neglected for more than 12 weeks between 1990 and 2008. The average preoperative limb shortening was 2.5 cm (range, 1.5-5 cm). Union was achieved in 49 of the 58 patients. Nine patients had non-union. Revision osteotomy was performed in five patients and four fractures united and one patient was lost to follow up. Three patients had lag screw fixation with fibular grafting to achieve union. One patient had total hip replacement. Thus union was achieved in 91.3% of the patients. Two patients having preoperative avascular necrosis showed signs of viability of femoral head after osteotomy. Limb-length equalization was achieved in 82% of patients. All of them had near-normal gait except one patient who had excessive shortening because of previous ipsilateral both bones leg and supracondylar femoral fracture. The average neck-shaft angle at the final followup was 132.7 degrees (range, 125 degrees -160 degrees). The minimum follow up was 2 years (mean, 8.9 years; range, 2-19 years). The average Harris hip score was 86.6 points and Merle d'Aubigné-Postel score was 14.5. We believe that modified Pauwels' intertrochanteric osteotomy is a reliable alternative to achieve healing in neglected femoral neck fractures. Coxa vara and limb length discrepancies can be corrected simultaneously.

Abstract no.: 29607

MR ARTHROGRAPHY FOR DYSPLASTIC HIP. DECISION MAKING FOR TRANSPOSITIONAL ACETABULAR OSTEOTOMY

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Transpositional acetabular osteotomy is applied for dysplastic hip. The best candidates for the osteotomy are the cases with early stage of osteoarthritis. However, some cases with dysplastic hip maintain joint space and hip function until elder. It is important to diagnose degeneration at the hip accurately before appearance on the x-ray. So, MR arthrography was applied the dysplastic hip without degeneration on x-ray, in order to make the decision for transpositional acetabular osteotomy. We studied the finding of MR arthrography for such hips. Methods and Methods: Twenty seven hips of a male and twenty three females with an average age of thirty seven years old were examined. Gd-DTPA(0.2ml/kg) was injected thirty minutes before MR imaging. The bone and soft-tissue damages around the hip were detected on coronal slices and parallel slices to the femoral neck axis. The superior hemisphere of the hip was divided three parts that were anterior, superior, posterior part. The damages of bone and soft-tissue were detected at each part. Results: The enhanced findings that show bone and soft-tissue damage were on detected twenty five hips. These hips contained the soft-tissue damage at the anterior part. Eleven hips showed the soft-tissue damage at the superior part. Bone damages at anterior part were detected in twelve hips. No hip show any damages at posterior part. Discussion/Conclusion: Degeneration of dysplastic hip begins at anterior and superior part of the hip. MR arthrography is useful tool for decision making of transpositional acetabular osteotomy.

Abstract no.: 29611

TOTAL HIP REPLACEMENT IN THE YOUNG: WHICH BEARING? A META-ANALYSIS

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Although there is general consensus about the efficacy of total hip replacement (THR) in young patients, the most appropriate bearings in young patients remain highly debated. The three most popular bearings in use include metal-on-poly (MOP), metal-on-metal (MOM) and ceramic-on-ceramic (COC). We conducted a systematic review and meta-analysis of literature to summaries the best available evidence on relative success of the three most popular bearings used in THR in young active patients. Our findings support the use of MOM bearings in the management of the young arthritic hip. These findings, largely based upon observational studies should be taken in context to the limitations of such non-randomized study designs.

Abstract no.: 29613

SURGICAL CORRECTION OF DEFORMITY, AND IMPROVEMENT IN QUALITY OF LIFE IN PATIENTS WITH DEGENERATIVE LUMBAR SCOLIOSIS

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Degenerative Lumbar Scoliosis (DLS) is defined as a spinal deformity in a skeletally mature patient with a Cobb angle of more than 10° in the coronal plane formed as a result of degenerative changes in the vertebral column. The foundation of surgical treatment is restoration of anatomical conditions with simultaneous stabilization of an operated segment of the vertebral column. In our opinion TLIF method seems to be a favorable technique. The aim of surgical treatment is to correct the deformation and, what is more important, to improve the sagittal balance of the spine. This may be achieved by the osteotomy of vertebral bodies and the insertion of asymmetric implants to the intervertebral space. Our objective was to investigate the correlation between the deformity correction assessed radiologically and the improvement of quality of life (QoL) among patients after surgical treatment of DLS using TLIF method. This is a retrospective comparison of fifteen consecutive DLS patients in the material of our ward and was conducted between 2006 and 2011. All the patients were surgically treated using transpedicular screws and TLIF implants. QoL was measured using Roland Morris Disability Questionnaire and Numeric Pain Intensity Scale and was evaluated preoperatively as well as 6 and 12 months after the surgery. RMDQ and pain evaluations showed a significant ($p>0,001$) improvement comparing to preoperative values. The results of this study prove an enhancement in QoL and pain reduction after the surgery irrespective of the degree of deformity correction.

Abstract no.: 29615

MONO-SEGMENTAL PEDICLE SCREW INSTRUMENTATION AND POSTERIOR FUSION IN THORACOLUMBAR FLEXION-DISTRACTION INJURY

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Flexion distraction injuries of the thoracolumbar spine can be stabilized with a short segment pedicle screw instrumentation spanning one above and one below the injured vertebra, and this short segment instrumentation is accepted as the standard treatment. To preserve more motion segments, the authors have used mono-segmental pedicle screw instrumentation and posterior fusion to treat flexion-distraction injury in thoracolumbar spine. Objective: To evaluate the clinical efficacy of mono-segmental pedicle screw instrumentation and posterior fusion for the treatment of flexion-distraction injury in thoracolumbar spine. Materials and Methods: Four patients with flexion-distraction injury in thoracolumbar spine underwent mono-segmental posterior fusion with pedicle screw fixation were reviewed after a minimum follow-up of 3 years. The average age was 39 years (range, 30 ~ 55 years) with a male:female ratio of 2:2. Preoperative BMD of spine was -1.3 (range, 0 ~ -2.3). The pedicle screws were inserted into the fractured vertebra and one above after bilateral facetectomy. The rod was locked with compression, and posterior fusion was done. Patients walked upright on their legs the day after surgery and wore a thoracolumbosacral orthosis for 3 months. Results: Preoperative kyphosis of 20 degrees was corrected to 17 degrees at latest follow-up. Postoperative CT taken 1 year after surgery showed neither hardware failure nor non-union. Preoperative Oswestry score of 43.6 was improve to 8.8 at latest follow-up. Conclusion: This study demonstrates the efficacy of mono-segmental pedicle screw instrumentation and posterior fusion in flexion distraction injuries of thoracolumbar spine.

Abstract no.: 29619

**SILENT CARDIAC CO-MORBIDITY IN ARTHROPLASTY PATIENTS:
AN UNUSUAL SUSPECT?**

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We studied the case records of 109 patients who were subjected to dobutamine stress echocardiography (DSE) for pre-operative cardiac risk assessment in patients undergoing primary hip and knee arthroplasty. Patients were selected for DSE based on several criteria. There were sixteen patients with history of ischemic heart disease (IHD) and 93 patients without. Seven out of 93 patients showed a positive DSE test, of which five developed post-operative cardiac events ($p=0.00$). This study clearly shows that serious "silent" cardiac co-morbidity can exist in patients undergoing routine hip and knee arthroplasty. We believe that identifying these patients and treating them before arthroplasty can improve the overall outcome of the surgery significantly. Key words: Arthroplasty; silent co-morbidity; treatment outcome.

Abstract no.: 29620

**A MATCHED COMPARISON OF LENGTHENING OVER NAIL (LON)
VERSUS INTRAMEDULLARY SKELETAL KINETIC DISTRACTION (ISKD)
FOR FEMORAL LENGTHENING**

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Background: Lengthening over nail (LON) and the use of internal lengthening nails (ISKD) have been developed to minimize patients' time in a frame during femur lengthening. **Aims:** We aimed to compare the techniques in terms of (1) better predictability for achieving lengthening goals; (2) differences in distraction rates; (3) quality of the regenerate and time to union; (4) complication profile; (5) outcomes in SF-36 scores and AAOS LLM scores?

Methods: 12 consecutive ISKD procedures were performed for femoral lengthening and followed for an average of 76 months. 20 consecutive LON procedures were then performed and followed for an average of 27 months. **Results:** There was no significant difference in achieving the lengthening goals between the two procedures. The healing index for the LON group averaged 1.4 months/cm, while the ISKD group was 3.2 months/cm ($p=0.242$). The distraction rates for the ISKD had a fast group ($>1\text{mm/day}$) with an average distraction rate of 1.7 mm/day and a slow group ($<1\text{mm/day}$) with a distraction rate of 0.84 mm/day. The LON group had an average distraction rate of 0.88 mm/day ($p<0.001$). The incidence of complications that required further unanticipated surgeries for the LON group was 1/20 (5%), while the ISKD group had complications in 6/12 femurs (50%, $p=0.004$). **Conclusions:** We conclude that the LON technique is a more predictable and reliable method for femoral lengthening than the ISKD.

Abstract no.: 29621

RELATIONSHIP BETWEEN POST-OPERATIVE FALL IN HAEMOGLOBIN AND POST-OPERATIVE FEVER IN SIMULTANEOUS BILATERAL TOTAL KNEE REPLACEMENTS. A COMPARATIVE STUDY

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Introduction: Fever after total knee replacement (TKR) is a common phenomenon. There has been a lot of debate whether this fever is related to post-operative drop in haemoglobin. We wished to study two groups of patients undergoing simultaneous bilateral total knee replacements to see if there is a correlation between the drop in haemoglobin and onset of fever. **Material and methods:** We performed a retrospective analysis of records of patients who underwent bilateral simultaneous total knee replacement. We compared 25 patients who had immediate post-operative fever ('fever group') with 27 patients who had no fever ('no fever group') for fall in the post-operative haemoglobin levels. **Results:** The mean age in 'fever group' was 67.32 and in 'no fever group' was 64.74 years. Mean fall in haemoglobin in 'fever group' was 2.602 gm% and in 'no fever group' was 2.393 gm%. Though the mean fall in haemoglobin in the patients in 'fever group' was more compared to patients in 'no fever group', the difference was statistically insignificant ($p = 0.511$). **Conclusion:** This study does not support the belief that fever after total knee replacements is due to a sudden drop in post-operative haemoglobin. To our knowledge, this is a first study to assess the relationship between drop in haemoglobin and fever in simultaneous bilateral TKRs. The cause of fever after TKRs appears multifactorial and needs extensive evaluation.

Abstract no.: 29626

ALLOPLASTIC HIP REVISION SURGERY BECAUSE OF A BROKEN CERAMIC HEADS OF TOTAL HIP PROSTHESIS, VIEW A PATIENT WHO HAD FRACTURE OF CERAMIC HIP PROSTHESIS HEAD, TWICE

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A patient aged 50 years Z.M. has operated 31.06.2005 when he built cementless total hip arthroplasty ceramic ceramics because of the hip osteoarthritis. Regularly controlled at 3 months in the first postoperative year, in the second year at 6 months. January 2007, after living trivial trauma fractures occurred on ceramic head prosthesis and underwent replacement surgery of the ceramic liner and head. One month after the surgery in February 2007. traumatic dislocation of the hip. Resolved conservatively. The patient functioned normally to February 2010. when it was again after a trivial trauma occurred on ceramic head fractures hip prosthesis. Patient was operated by removing the all acetabular components of hip prosthesis and replaced with cementless shell and polyethylene liner constrained. For now, the patient is functioning well. What was the reason of the ceramic head hip prosthesis fractures?: Poor operational technique? Repeated mini trauma or subluxation? Bad material? None of this or perhaps a little of all these things? There is no logical explanation for the fracture of ceramic hip prosthesis head in one patient in the last 5 years. Finding new ceramic materials will likely put the ceramics in the first place as the material at the junction of acetabulum and head THP. We don't claim that our solution is ideal, but I.T. Pulliam and all recommended that in the revision surgery do not use ceramic hip prosthesis components.

Abstract no.: 29627

MODULAR METAPHYSEAL SHORT STEM FOR FEMORAL NECK FRACTURE IN ELDERLY PATIENTS

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Increasing consensus to use cementless tapered stem regardless of bone quality and enthusiastic outcome motivated us to conduct clinical trial using short stem in geriatric patients with fracture of femoral neck. This is a prospective consecutive study, comprises of 46 cases with fracture of femoral neck, managed with use of modular metaphyseal short stem. Average age of cases was 76 years (Range 63-91 years). Serial postoperative radiological evaluations were done to find out restoration proximal femoral geometry and primary stability of stem. Postoperative restoration of proximal femoral geometry without statistically significant alteration in offset and anteversion, increase in neck shaft angle ($p=0.000$) compare to preoperative value. None of the case has significant postoperative limb lengthening. The average subsidence was 0.31 ± 0.883 mm. Statistically subsidence was not found to have positive correlation with age, sex, Dorr's type, BMD and BMI (P value=0.757, 0.617, 0.133, 0.798 and 0.388). Primary stability of cement-less modular metaphyseal short stem in elderly patients with femoral neck fracture is satisfactory and introduces the promising longer follow up perspective.

Abstract no.: 29630

PRIMARY DYNAMIC REAMED INTERLOCKING NAILING IN SELECTED TIBIAL FRACTURES

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Objective: To evaluate the results of dynamic locked interlocking nailing configuration applied primarily in selected tibial fractures. **Patients and Methods:** A retrospective analysis of 26 cases with tibial fractures treated by primary dynamic interlocking nailing. The mean age was 36.07 ± 10.85 years. 14 had motor vehicle accidents and 12 sustained a fall. There were 21 closed and 5 open fractures. Fracture was transverse in 18 and oblique in 8. Mean follow up was 35.6 months. **Results:** Mean time to surgery was 3.88 ± 3.07 days. Mean operative time was 59.3 ± 14.2 minutes. Mean time to union was 10.13 ± 1.19 weeks. Mean time to union was 9.4 ± 1.14 and 11.6 ± 0.54 weeks in closed and fractures respectively which was statistically significant ($P=0.004$). Mean time to union in oblique and transverse fractures was 10.06 ± 1.2 and 10.50 ± 1.4 weeks respectively and this was statistically insignificant ($P=0.462$). Angular deformity of $2-5^\circ$ occurred in 5 cases. Rotational deformity of $4-8^\circ$ occurred in 5 cases (19.2%). There was no length discrepancy, metal failure, or nonunion. We had 2 superficial wound infections. The mean time of return to work was 11.0 ± 1.13 weeks. All patients regained full range of motion of ankle and knee joints. **Conclusion:** We concluded that this technique is safe and reliable because of high union rate with a short healing time; early weight bearing; and early return to work.

Abstract no.: 29634

**HIGH VERSUS LOW FEMORAL TUNNEL POSITION IN SINGLE BUNDLE
ACL RECONSTRUCTION**

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Introduction: It was hypothesized that lower femoral tunnel position would lead to better stability control in patients receiving Anterior Cruciate Ligament (ACL) Reconstruction.
Methods: A consecutive series of 42 patients receiving single bundle hamstring ACL reconstructions were recruited between 2007 and 2008. All patients were followed up regularly until one year after index operation. Reassessment MRI was performed in 38 subjects (91%). Patients were classified as having high femoral tunnel (>10.5 o'clock) versus low femoral tunnel (<10.5 o'clock). Comparison of subjective IKDC score and presence of residual ACL laxity were done between the two groups using Mann-Whitney U test and Chi square test.
Result: The average femoral tunnel position was at 10.6 o'clock (SD=1.9 minutes). 15 patients were in the low femoral tunnel group while 23 in the high tunnel group. There was no difference between the two groups in terms of age, sex, pre-operative IKDC score, post-operative femoral and tibial tunnel position in the sagittal cut MRI ($p>0.05$). At one year after the index operation, patients in the low femoral tunnel group were noted to have a significantly higher subjective IDKC score (88 versus 80, $p=0.049$, Mann-Whitney U test). However, no significant difference in the residual ACL laxity was found between the two groups ($p>0.05$, Chi square test).
Conclusion: A low femoral tunnel position in single bundle ACL reconstruction led to a better subjective IKDC score at one year after the index operation.

Abstract no.: 29637

ANTERIOR DEBRIDEMENT AND BONE GRAFTING OF LUMBAR TUBERCULOSIS WITH POSTERIOR INSTRUMENTATION IN ONE OR TWO STAGES

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INTRODUCTION: The incidence of spinal tuberculosis is still high in the developing country. The tuberculosis in the lumbar spine accounts for about one fourth of the whole spinal tuberculosis. Regular antituberculous chemotherapy is essential for the lumbar tuberculosis management. The surgical intervention has been proven to be successful in the appropriately selected patients. In this study the authors described their experience on the surgical treatment of lumbar tuberculosis with anterior debridement and bone grafting and posterior instrumentation in one or two stages. **METHODS:** All the patients received at least 2 weeks of regular antituberculous chemotherapy before surgery. The posterior long segmental instrumentation was carried out firstly with or without debridement according to the severity of disease. Then the debridement and iliac bone graft were performed through anterior approach. The two procedures were performed in one or two stages depending on the general condition of the patients. **RESULTS:** All patients were followed up at least for 48 months. Local symptoms of all patients were relieved significantly 1–3 weeks postoperatively. The neurological deficit was improved and the kyphosis were corrected. Erythrocyte sedimentation rates (ESR) decreased sharply in two to three weeks postoperatively. Fusion rate of the grafting bone was high in two years postoperatively. No severe complications occurred. **DISCUSSION:** The anterior debridement and bone grafting with posterior instrumentation in one or two stages was one of the effective methods in the treatment of lumbar tuberculosis. Two-stage procedure was especially suitable for the patients with the poor general condition.

Abstract no.: 29638

EXPERIMENTAL POSTERIOR ELBOW DISLOCATION IN TWO PRIMATE MODELS

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PURPOSE: This comprehensive research describes detailed anatomical, mechanical and finite element mode changes of capsule, ligaments and articular bony surfaces of the dislocating elbow joint under different loading conditions. **MATERIALS AND METHODS:** Sixty two baboon arms and 21 human cadaver specimens were studies in succession over a 6 year period. The skeletonized specimens were mounted in similar customized elbow jigs in an Instron machine. In Group I (hyperextension force) was applied to the elbow. In Group II (axial load) was applied to the elbow in 20 to 90 degrees of flexion and forearm pronation or supination. A human finite element (FE) model was made from CT and MRI images using ANSYS. **RESULTS:** The following findings were generally the same for both species. In Hyperextension Group I Orders of soft disruption were: anterior capsule, anterior medial collateral ligament tear posterior displacement of radius and ulna. There was no bony fracture and radial collateral ligament remained intact. In the axial load group II the order of tissue disruption were: anterior radial head and or coronoid process fracture, radial collateral and annular ligament complex displaced distally with posterior medial collateral ligament tear then lateral collateral ligament tear and finally the tearing of the anterior medial collateral ligament. Distal humerus fracture occurred when the elbow was loaded at 90° flexion. FE modeling supported the clinical findings **DISCUSSION:** During the early stages of complete clinical posterior elbow dislocation with axial loading, ligament structures remain grossly intact, so that early controlled elbow motion is safe.

Abstract no.: 29640

**PREOPERATIVE RISK FACTORS OF SPINAL SURGERY IN
HEMODIALYSIS PATIENTS**

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OBJECT: As hemodialysis patients have higher risk of surgery, the assessment of risk factors before surgery is very important to decide surgical indication. The objective of this study is to evaluate preoperative risk factors influenced to prognosis after spinal surgery in hemodialysis patients. **MATERIALS AND METHODS:** We retrospectively reviewed 34 hemodialysis patients (mean age: 66.9 years, 22 male and 12 female) who underwent spinal surgeries between 1993 and 2010. The patients were divided into following two groups: died within 1 year after surgery (Group-D: 4 patients 11.8%); and the other patients (Group O). The medical records of all patients were reviewed and their comorbidity, laboratory findings were compared between the two groups. Additionally, multivariate logistic regression analysis was employed to determine the risk factors of death within 1 year after spinal surgery. **RESULTS:** In Group D, there were more rates of the patients with rheumatoid arthritis than that in Group O. A mean value of serum total protein (TP) and body mass index before operation in Group D (5.88g/dl, 18.0) were significantly lower than that in Group O (7.17g/dl, 21.1)($p<0.05$). A value of TP (odds ratio=9.14, $p=0.017$) was determined as a significant risk factor for death within 1 year after spinal surgery in hemodialysis patients by logistic regression analysis. **CONCLUSION:** The results of this study suggest that the risk factors of poor prognosis after spinal surgery in hemodialysis patients are lower TP before operation.

Abstract no.: 29642

**THE TREATMENT OF Isthmic Spondylolisthesis WITH
INTERVERTEBRAL SPACE DISTRACTION REDUCTION**

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INTRODUCTION: Surgical treatment of isthmic spondylolisthesis has been proven to be successful in appropriately selected patients. Surgical techniques include decompression, PLF, IF, and circumferential fusion. The reduction technique of slip is a controversial issue. The authors introduce their experience in the treatment of isthmic spondylolisthesis with intervertebral space distraction reduction. **METHODS:** The isthmic spondylolisthesis was treated with intervertebral space distraction reduction and PLIF in the author's department. The posterior approach was used in the intervention. The exposure of the vertebral plate and the facet joint of the slip segment were performed firstly. The pedicle screws were inserted followed by the decompression and the remove of the disc. The disc space was distracted with the disc space distractors step by step until the annulus was tense. The reduction was partially or completely reduced. After the fixation was achieved temporarily through the contralateral connection rod, the single cage was inserted obliquely and bone graft was performed. The fixation was finally achieved after the connecting rods were applied. **RESULTS:** The intervertebral space was distracted gradually with the disc space distractors. The height of disc space was restored step by step. And the reduction was achieved through the increase of tension in the anterior and posterior longitudinal ligaments and the annulus. The fusion rate was high and the complication rate was low. The reduction rate and the clinical outcome were satisfied. **DISCUSSION:** The PLIF with the intervertebral space distraction reduction was one of the effective methods to treat lumbar isthmic spondylolisthesis.

Abstract no.: 29655

HILL-SACHS LESION RECONSTRUCTION USING TRU-FIT PLUG

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A Hill-Sachs lesion, produced following an anterior shoulder dislocation, is commonly found at the postero-lateral aspect of the humeral head. Such a defect can lead to recurrent shoulder dislocations. TruFit plugs (Smith & Nephew) are bone graft substitutes encouraging the regeneration of articular cartilage and restoration of mechanical properties. We present a case of a young male patient experiencing recurrent shoulder dislocations whom underwent a TruFit plug repair of the Hill-Sachs lesion. Humeral head was exposed via a modified minimally invasive delto-pectoral approach. An anterior to posterior guide wire was inserted with the end of the guide wire exiting centrally in the Hill Sachs defect. The guide wire was removed and the TruFit drill was used to ream a tunnel in the same direction. A 9mm TruFit plug was inserted and press fit in a retrograde fashion from anterior to posterior direction through the tunnel (pre-op MRI defined the lesion size). A TruFit plug of same size was press fit anterograde at the entry portal. Post-op regime involved support with a polysling and passive exercises for 2 weeks. Active-Passive exercises commenced after 2 weeks with regular follow up. At 6 months, clinical examination showed full range of movement of the shoulder joint with no signs of instability. MRI scan showed complete incorporation of TruFit plug at the site of the original defect. There were no complications. The use of a TruFit plug bone substitute can be an alternative method to treat Hill Sachs lesions caused by shoulder dislocations.

Abstract no.: 29662

AN OUTLOOK OF INTRAMEDULLAR DRAINAGE NAILS CLINICAL APPLICATION

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The goal of the work was to determine the clinical potential of the intramedullar drainage nails, created on the base of Donetsk R&D institute of traumatology and orthopedics. After test operations on animals that were proved high efficiency of associated osteosynthesis and irrigation of medullar cavity we provide clinical trials in different departments. Three kinds of directions were in the center of our attention. First one was the open fractures with the high level of bacterial contamination. Second one was treatment of chronic fractures with suppurative complication. The last one was treatment of fractures on the background of degenerative processes. In all three ways of applying we reached the unique possibilities for us. Irrigation provided with antiseptics, antibiotics and fungicydes, stimulators of metabolism, platelet-rich plasma, stem-cells. All cases were singular but already now we can send a word about great clinical potential of drainage nailing system.

Abstract no.: 29663

PROXIMAL HUMERUS FRACTURES TREATED WITH ANGULAR STABILITY PLATE AND NAIL. WHICH IS THE BEST TREATMENT TO RESTABLISH A GOOD ANATOMY AND FUNCTION?

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Purpose: In our study we compare the use of two types of osteosynthesis for proximal humeral fractures; we evaluated which treatment restores better anatomy and better functional result. Material and methods: From 1998 to 2009 197 patients were treated for proximal humerus fractures. 50 of these where treated with Plate; other 30 with a nail. We evaluated the angle of anatomic neck, the angle of the head in the AP view. The radiological evalutation was in the early post-operative, at 9 weeks post-op at 18 months, and 24 months post-op. We also valuated clinical and functional results with Costant Score. Results: The quality of reduction was better in patients treated with plate; at 2 years post-operatively the rom was better in those treated with plate. The costant score was 77% in pz treated with plate and 65% in those treated with nail. Radiological follow up evidenced a significant correction of the anatomic neck angle and of the angle of the head in patient treated with plate compared to those treated with nail. Conclusion: The best clinical and radiologic results obteined in patient treated with plate vote to this type of osteosynthesis. Infact this type of plate had cephalic angular stability screws that better restablished the normal version of humeral head and so a better anatomy with better clinical result.

Abstract no.: 29678

**MANAGEMENT OF DIFFICULT FRACTURES BY SIMPLE TECHNIQUES
IN RURAL INDIA**

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Difficult fractures (comminuted, open and infected, segmental etc...) are usually difficult to treat. Current trend is to perform fixation using different implants and techniques. However in certain situations the attending orthopedic surgeon may consider alternative simple techniques such as closed reduction and plaster, traction, pin and plaster technique, external fixator, braces etc. Majority of people from rural India are poor , medical facilities for major surgery and anaesthesia , ICU setup are not available .Even government general Hospitals are not equipped with facilities for major orthopaedic surgery. In this paper, we would like to report our experience of 53 such patients who were treated by using simple methods over a period of last 10 years. Majority of patients were young male adults, involved in RTA with long bone fractures (Tibia fibula 19, Femur 10, Humerus 15 etc...). After detailed discussions with the patients following methods were used to treat their fracture such as closed reduction and plaster(18) , Traction(14) , pin and plaster technique (2) ,External fixator technique(7), braces(12). Immobilization of fracture till fracture united (6 weeks to 4 years). However, 2 patients preferred ORIF surgery after some period and 3 required bone grafting operation at a later stage. Complications such as acceptable malunion (6), non union (4) , shortening (10) were observed , all patients had satisfactory results. Emphasis is given on use of good old simple methods in certain situations, their indication in the present era and a need for learning these methods for orthopedic trainee doctors.

Abstract no.: 29682

OSTEOTOMY OF THE SECOND METATARSAL HEAD IN TREATMENT OF FREIBERG'S INFRACTION

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Freiberg's Infraction most often occurs in the second metatarsal head. The etiology is unclear, but hypothesis considers vascular etiology. Younger females are more often suffering from this illness. We analyzed 24 patients with stage III and IV of this disorder, which had operative treatment. 20 persons were female and 4 male. All of them had pain in foot during walking, and deformity in metatarsal head and limitation of motion. All patients had symptoms for more than a year. All of them had operative treatment with corrective osteotomy by Gauthier technique, followed by postoperative treatment with antibiotics during 3 days and thromboembolic prophylaxis. None of the patients had infection. Weight bearing was not permitted for 6 weeks. Bone healing, on place of osteotomy, was seen after two months. We followed patients for one year after the surgery with radiography and clinical control on every two months. Patients didn't regain as much of active motion, but passively the metatarsophalangeal joint has sufficiently flexibility to satisfy function of the foot. All patients were wearing over the counter inlays. Pain relief was noticed in all patients. Conclusion: we consider this method very good in treatment the III and IV stage of this disorder.

Abstract no.: 29686

USE OF AUTOGENOUS FIBULAR GRAFT FOR GAP NON-UNION OF HUMERUS IN CHILDREN: LONG FOLLOW-UP OF TWO CASES

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Gap non-union, is one of the feared and difficult complication of the osteomyelitis of long bones, especially among the paediatric age group. It has always remained a challenge for the treating orthopaedician. We present long follow-up of two cases, where autogenous fibular grafting done for gap non-union of humerus. Case 1: A 9-year old boy presented with the deformity of right arm for 3 months following a history of high grade fever and discharging sinus over right proximal arm. Physical examination revealed a puckered scar over right proximal arm adherent to underlying bone, there was also a break in the continuity of right proximal humerus with presence of painless abnormality. Patient was operated and debridement of the edges and autogenic non-vascular free fibular grafting was done. Subsequently at 3 years follow-up, patient has regained functional range of movement at the shoulder and complete incorporation of fibula into the humerus. Case 2: A 4 ½ year old girl presented with deformity of left arm. Physical examination revealed shortened left arm, with painless abnormal mobility and a puckered scar. She also had ipsilateral stiff elbow. Patient was operated and debridement and fibular grafting was done. At 9 years follow-up, there is complete incorporation of fibular graft. Conclusion: Use of autogenous free fibular graft for the treatment of gap non-union of long bones in the paediatric age group is an attractive option, as there is seen complete incorporation of fibula following recanalization and appositional growth.

Abstract no.: 29689

ANTERIOR CRUCIATE LIGAMENT INJURIES IN SAUDI FEMALES

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BACKGROUND: Anterior cruciate ligament (ACL) injuries among Saudi females are understated as women of the past were not exposed to sports due to cultural restrictions.

Their participation is much higher now, which results in higher incidences of sports-related injuries, including ACL. **PURPOSE:** The standard management of this type of injury in Saudi Arabia is conservative treatment, which usually results in them not being able to resume their sporting activities. It might also lead to muscle weakness and early osteoarthritis. On the other hand, surgical treatment has been proven to achieve better results such as good range of motion, stability, less pain and women returning to sports.

METHOD: An observational retrospective study was conducted on 14 Saudi females with isolated ACL injury. Diagnosis was confirmed by clinical examination and magnetic resonance imaging. Hamstring graft was used for 12 patients, and 2 had patellar tendon graft. Lyshlom and Tegner scales, and the KT1000 test were used for evaluation post-operatively. **RESULTS:** Range of motion pre and post-operatively was full and the knees were stable post-operatively without any complications. The Tegner scores were 7 for all the cases pre-injury as well as post-reconstruction, while the rest had a score of 6. The pre-injury Lyshlom scores for all the cases were 100. Post-operatively, 10 cases continued to have a score of 100, 2 scored 95, and the other 2 were 96. **CONCLUSION:** The study has shown that surgical treatment is a superior way of management associated with a good outcome that might enhance patient satisfaction.

Abstract no.: 29693

**IMPLANT ASSOCIATED MYCOBACTERIAL (TUBERCULOUS)
INFECTION**

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Pyogenic implant associated infection is well known complication of fracture fixation surgery. Mycobacterial Tuberculous infection following implant surgery is very rare. We report 17 such patients, 15 male and 2 female with average age of 40 years .10 patients had open fractures and 7 patients had closed. Various type of implants were used such as IM nailing in 7 patients , plate fixation in 7 patients , screws & wire fixation in 2 and prosthesis in 1 patient. Early diagnosis was made mainly by clinical picture supported by ZN stain. All patients were treated by principles of implant associated pyogenic infection and full course of antibiotic treatment. Fractures were united in 12 patients and alternative procedures were performed in 5 patients such as arthroplasty and arthrodesis. In this paper an attempt has been made to find out predisposing factors, aetiology, clinical picture and appropriate management of Tuberculous infection. Emphasis is given on early clinical suspicion and prompt diagnosis by ZN stain, early treatment with anti tubercular therapy can cure the disease, achieve fracture union and prevent further complications with its attendant morbidity.

Abstract no.: 29696

SURGICAL TREATMENT OF SPASTIC CP IN UPPER LIMB

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Clinical Materials: 7 Cases: 4 males, 3 females (the age varied from 7-23 years). All the cases belonged to Pattern 2B Zancolli's calcification. They were spastic CP in upper limb with flexed elbow, pronated forearm, flexed wrist, MP, PIP & DIP joints and thumb in palm deformity. Management: Principles of treatment are: 1. Correction of deformity. 2. Restoration of muscles balance and motor function. 3. Stabilization of unstable joint. 1. Correction of deformity: Soft tissue release. Release the origin of Flexor pronator, Flexor digitorum superficialis, Flexor pollicis longus and Flexor Digitorum profundus muscles. Correction of the thumb – in – palm deformity: Myotomy of abductor pollicis brevis, Flexor pollicis brevis and opponens pollicis. Stripping of the origin of the first dorsal interosseous muscles from the first metacarpal bone. 2. Restoration of muscles balance and motor function. Flexor Carpi Ulnaris Transfer to FCR longus. Post Operative care and follow up: At the end of surgery after soft tissue release and tendon transfer elbow is kept in full supination in above elbow cast for 6 weeks. Then he receive intensive course of physiotherapy. Results: Results are satisfactory and promising. Surgery does not only improve the appearance of the unsightly hand contracture and deformity but it provides a useful hand grasp and release. However it is a demanding surgery. The ideal candidate for surgery is spastic CP who is cooperative, intelligent and well motivated and has the pattern of grasp and release and the hand is reasonably sensitive.

Abstract no.: 29701

CONCEPT OF REVISION TKA

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Parallel to the increasing number of primary TKA, the increase of revision TKA in coming decades will need to be addressed. Revision TKA is a surgery, which need precise algorithm. This algorithm starts with the importance of the adequate diagnose. The diagnosis influences our planning for theatre, decisions to operate, chances of success. Before starting surgery, preoperative planning with include X-Rays, sometimes stress X-rays/CT might be helpful. After physical/radiological examination, an implant selection is made. Surgery begins with adequate exposure and removal of components (preserving bone-stock is very important). The remaining host bone will facilitate subsequent revision TKA. Implant fixation with uncemented/cemented stems depends on resection level and seating surface of the femoral/tibial component. Currently most revision-systems have offset stems available to not only get adequate stem fixation, but also better coverage of the tibia/better filling flexion-space. A plan of reconstruction of the joint line is mandatory, because severe joint line proximalisation should be prevented since this will interfere with knee kinematics, stability and patella function. Preoperative planning and filling of the flexion space are the most important tools to achieve this. Bone loss depending on type of defect could be treated with cement, augments morsilized/structural graft. And most importantly this procedure should be performed only by experienced surgery in the presence of the most modern equipment, and only in this case, the operation's success is guaranteed and the number of follow-nonsense operations are minimized.

Abstract no.: 29703

SEAMLESS SKIN WOUNDS CLOSURE WITH STRIP PATCH UNDER DORSAL SPINE DEFORMITIES SURGERY

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The aim was to determine the seamless skin wounds em-plastic closure efficiency during spinal deformities dorsal surgical correction. 312 patients 15-45 y.o. with IS who was operated by the Cotrel-Dubousset method were analyzed. Preoperative main arcs value were 41°-160° by Cobb. Postoperative scar length was 20-38 cm. Only the skin and subcutaneous tissue upper layers were dissected with a scalpel, further access to the spine was performed with an electro-tome by appropriate coagulation modes. After deformity correction and stabilization the wound was closed layer by layer by interrupted stitch to the skin. Skin edges were reduced by fingers to full contact and joined by adhesives such as «Steri-Strip» with gauze stacked on top. Patches replacement was performed at 3, 6 and 10 days, and complete removal of bandages - 14 days after surgery. Patients verticalization conducted on day 7, discharge from hospital - after removing the bandages. Results: At the first bandaging the skin edges fibrin gluing along the wound determined, during the second – full fibrin glue state, and the third - healing by first intention ending by 14 days. Further observation for 2-10 years showed mild cutaneous scar formation as a narrow band, gradually acquiring a solid color what was very important from the standpoint of surgical aesthetics. Patients positive perception and satisfaction themselves about presenting trace in their body should be noted. The results allowed recommending the seamless skin wounds em-plastic closure technology to be implemented as a standard in the spinal deformities surgical treatment.

Abstract no.: 29706

OPERATIVE TREATMENT IN CALCANEUS FRACTURES

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In our past practice, due to the lack of resources, we forced the conservative treatment way over the current accepted limits. Surgical procedures were done in limited cases, consisting in K-wire fixation, external fixators (in fractures with soft tissue impairing), and ORIF in limited cases, using Ollier's approach and reconstruction plates and screws. From this modest starting-point, we evolved in the last five years to a complete surgicalisation in young patients with displaced, comminuted or articular fractures, with full pre-operative evaluation using CT and Sander's Classification, lateral L-shaped approach, special calcaneus plates (some of them angle-stable implants) and bone substitutes. The post-operative results are encouraging, but the new techniques came together with new specific challenges and complications.

Abstract no.: 29709

ACHILLES TENDON OSSIFICATION

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Ossification of the Achilles tendon is a rare clinical condition that is characterized by the presence of one or more segments of variable sized ossified mass within the substance of the tendon. The aim of this paper is to report the clinicopathological features of Achilles tendon ossification of a new case, presenting plain radiographs, ultrasound, power doppler, and single photon emission computed tomography and transmission computed tomography findings. Methods: We describe 41 years-old patient with bilateral ossification of the Achilles. The patient was male. The chief complaint was pain in the Achilles tendon. The ossification site was near the insertion in both tendons. He had no laboratory abnormalities. Results: Plain radiography showed a 1.8×0.7 cm sized ossification near the left Achilles tendon insertion and a 3.2×2.4 cm sized ossification in the right Achilles tendon insertion. Ultrasonographic examination of the symptomatic left side showed fragmented intratendinous ossified echogenic morphology with abnormally increased vascularity on Power and color Doppler ultrasound. At the right side intratendinous ossification was more evident. Tc-99m MDP whole body scan in the anteriorposterior position demonstrates bilateral increased uptake corresponding to achilles tendon area. The findings of scintigraphy were correlated with SPECT-CT scan. Bilateral ossification of the Achilles tendons are observed on axial and coronal-reconstructed CT section. Conclusions: The etiology of ossification of the Achilles tendon is unclear. In the current case, we regarded repetitive microtrauma to the Achilles tendon as the causative factor in the ossification due to bilateral occurrence.

Abstract no.: 29710

PATTERN OF BONE TUMOURS SEEN IN A REGIONAL ORTHOPAEDIC HOSPITAL IN NIGERIA, AFRICA

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BACKGROUND: Primary bone tumours remain a challenge to orthopaedic surgeons in developing countries, due to late presentation, secondary to ignorance and poverty. This is further compounded by limited number of specialist personnel, diagnostic and therapeutic facilities. **OBJECTIVE:** To determine the pattern of presentation of patients with primary bone tumours in a regional orthopaedic hospital in Nigeria. **METHODS:** This is a retrospective review of all histologically confirmed primary bone tumours seen at National Orthopaedic Hospital, Nigeria, in 6 years. **RESULTS:** A total of 68 patients (aged range 7 - 74 years) were seen, with a peak age range of 11-20 years, in 18 patients (26.47%). 39 patients (57.35%) were males while 29 (42.65%) were females. The commonest benign tumour was osteochondroma (21) accounting for 44.7% of non-malignant bone lesions while fibrous dysplasia (11) was the commonest tumour-like condition (23.4%). Primary malignant bone tumour accounted for 30.88% of all bone pathologies, with osteosarcoma (17) being the commonest (80.1%). Generally, the leg (tibia/fibula) was the commonest region affected (38.23%). Only 20.58% of cases were seen within 3 months of onset and the commonest complaint is painless swelling (61.76%). Pathologic fracture was found in 10.29% of cases. **CONCLUSION:** Generally, primary bone tumours are commoner in males, in second decade of life, affecting the tibia/fibula. Malignant primary bone tumours (mostly osteosarcoma) are less common than others. Osteochondroma (exostosis) is the overall commonest pathology.

Abstract no.: 29711

NAILING IN DIFFICULT FRACTURES OF FEMUR

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Difficult fractures of the femur means those that are comminuted, segmental, difficult to reduce, and those whose reduction is difficult to maintain. The principles of treatment of such fractures are to maintain the length, rotation and to prevent soft tissue contractures and aim towards biological union. 50 cases of difficult femur fractures admitted to our institute from 2008 onwards were included in this study. Factors associated with good reduction and early union were assessed. The use of a fracture table was invaluable towards the treatment of such fractures. A supine position was mostly used but a lateral position was found to give excellent access to the entry point especially in obese individuals. Correct entry point was noted to be one of the key factors in such nailings. The reduction methods used for such nailings included a guide wire, T handle, femoral distractor, drill bit, joystick as also external fixator assisted reduction. Flexible reamers were used with central fragments temporarily held. Third generation nails like SIRUS and SOL-T were found to be especially useful in such cases. Post operative rehabilitation program was started on day 1. 4 patients had delayed union of which 3 subsequently united. Early complications included pulmonary embolism (1), infection (3), and edema. Late complications noted were knee stiffness in unco-operative patient (2), malunion (2), alignment issues and shortening, non-union (1) and breaking of implant (1). Good assessment of the fracture is the key factor. SIRUS and SOL-T are useful in difficult fractures. Good rehabilitation program is a must.

Abstract no.: 29712

CORTICAL WIDTH CAN PREDICT BONE MINERAL DENSITY AND SCREW PULLOUT STRENGTH IN THE DISTAL RADIUS

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Introduction: Estimating local bone mineral density (BMD) and screw pullout strength (SPS) can help choose the type of fixation and postoperative plan of a given fracture in the elderly population. This in turn may improve patient care and cost-effectiveness of surgery. Although BMD measurements have been shown to correlate with SPS, these measurements are not always available at the time of surgery. We hypothesized that the cortical width (CW) measured on x-ray can predict local BMD and SPS. **Methods:** Metaphyseal and diaphyseal CW was measured in 16 DEXA scanned cadaver distal radii (age 71±15 years); 3.5mm screws were inserted into each region and SPS was recorded using a servohydraulic test system. The measured CW was correlated to the region specific DEXA-BMD and T-score measurements and to SPS. **Results:** Diaphyseal CW correlated both to DEXA-BMD ($R^2=0.7$, $p<0.0001$) and T-score ($R^2 =0.67$, $p <0.0001$) and to SPS ($R^2 =0.5$, $p=0.002$). In the metaphyseal region the correlations were lower but statistically significant for DEXA-BMD ($R^2=0.46$, $p<0.0025$) and SPS ($R^2=0.49$, $p=0.0031$). The correlations between DEXA-BMD and SPS were significant for both the metaphyseal ($R^2=0.75$, $p<0.0001$) and diaphyseal ($R^2=0.52$, $p<0.01$) regions. **Conclusion:** CW may be used as a simple low cost measurement of local BMD and SPS in the elderly population. Further biomechanical and clinical studies are needed in order to further test the utility of this method.

Abstract no.: 29720

TITANIUM ELASTIC NAILS FOR TREATMENT OF LONG BONES SHAFT FRACTURES IN CHILDREN

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INTRODUCTION: Conservative treatment of the long bones shaft fractures was a gold standard last years in children. Complications such as mal-unions, non-unions, limb shortening and partial stiffness of nearby joints were mentioned. These complications were related to long-term cast immobilization combined with poor fracture fragments fixation.

For treatment of displaced long bones shaft fractures in children up to 3 years we prefer intramedullary osseosynthesis using titanium elastic nails (TEN). **MATERIALS AND METHODS:** From January till November 2010 we treated 24 patients with shaft fractures: radius and ulna – 15, humerus – 2, femur – 3, tibia – 4. In one case femoral shaft fracture was caused by osteogenesis imperfecta. All fractures were treated by closed reduction and percutaneous TEN insertion under fluoroscopy control. Ex-fix was used in 2 cases for prevention of the femur shortening. We didn't use external immobilization in all children. A full range of motions in nearby joints was allowed immediately after operation.

RESULTS/DISCUSSION: A complete fracture healing with proper alignment and rotation was achieved in all cases. TEN's were removed 3-4 months after surgery. Function of operated limbs was measured using standard scales. In one case a nail migration was mentioned in child with OI. To prevent TEN migration it should fit canal in diameter and be pre-bended enough to achieve maximum stability. **CONCLUSION:** Closed intramedullary nailing using titanium elastic nails in children is method of choice for treatment of shaft fractures, which allows full function of operated limb first days after surgery without any external immobilization.

Abstract no.: 29728

COMPARISON OF POSTERIOR PSOAS BLOCK AND SPINAL ANAESTHESIA FOR KNEE ARTHROSCOPY

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Background: The purpose of this prospective, randomized study was to compare the clinical profiles of posterior psoas block and spinal anaesthesia performed with hyperbaric bupivacaine. **Methods:** After a standard midazolam/ketoprofen premedication and baseline measurement of cardiovascular parameters, 70 ASA I-II patients, aged 20 to 33 years, scheduled for elective outpatient knee arthroscopy were randomized to receive spinal anaesthesia with 8 mg of 0.5% hyperbaric bupivacaine, or posterior psoas block with 20 mL of a mixture of solution containing 15 mL of 0.5% bupivacaine, 5 mL of 2.0% prilocaine. **Measurements:** Times including that from arrival in the operating room to readiness for surgery, duration of surgery, recovery time, and patient satisfaction were recorded. Analgesia and occurrence of adverse events also were recorded. **Results:** Peripheral nerve blocks have been reported to be associated with lower morbidity and cardiovascular effects than central blocks, but they are less popular than spinal anaesthesia, mainly due to the long learning curve and expertise required. Spinal anaesthesia is the most widely used form of differences in haemodynamic side effects and additional analgesia may be needed intraoperatively. Postoperative pain differed significantly between groups only at 6 hours. Patient satisfaction was high with both techniques. **Conclusion:** In patients receiving elective knee arthroscopy, using a posterior psoas block technique results in a slightly longer preoperative time but provides similarly effective anaesthesia with a clinical profile similar to that of low-dose spinal anesthesia.

Abstract no.: 29730

COMBINED ONE ANAESTHESIA SURGERY IN CERVICAL SPONDYLOGENIC MYELOPATHY

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Anterior surgery is indicated in anterior or combined anterior and posterior cervical spinal canal compression. Posterior surgery is performed in multilevel stenosis (laminoplasty in straight or lordotic cervical spine). The purpose of this prospective study was to evaluate combined one anaesthesia surgeries (laminoplasty followed by anterior decompression, instrumented fusion) in severe cervical spinal stenosis, where an isolated anterior surgery would be too risky and posterior surgery would not lead to patient improvement. Material and methods: From 2004 to 2010 we operated on 31 patients (25 males, mean age of 56 years), suffering from cervical spondylogenic myelopathy. Mean surgery time was 272 minutes, mean blood loss 540 ml, mean follow-up 35 months. Posterior surgery – laminoplasty – 5 laminae in 14 cases, 4 in 10, 3 in two, 2 in 5, was followed by anterior instrumented fusion using pelvic autograft and plate – 1 level in 19, 2 in 8 and 3 in 4 cases. There were 23 patients with quadripareisis and 3 with radiculopathy. Results All patients improved, mean mJOA score before surgery 13,0 improved to 14,4. Six complications were found – surgically treated bleeding after graft harvesting, liquor cyst, epidural veins blood loss, cerebral ischemia and temporary delirium after surgery. One 71-year old patient died 6 weeks after surgery due to renal failure. Conclusion: The authors consider combined one anaesthesia surgery (laminoplasty, followed by anterior instrumented decompression and fusion) to be useful in cases of severe cervical spondylogenic myelopathy (sagittal spinal diameter 8 mm or lower) in younger patients.

Abstract no.: 29734

**SURGICAL TREATMENT OF DYSPLASTIC SPONDYLOLISTHESIS OF L5
BY 360 DEGREE FUSION WITH AUTOLOGOUS FIBULA FROM
POSTERIOR APPROACH IN CHILDHOOD**

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Partial reduction, transpedicular fixation, 360 degree fusion of L5-S1, posterior or combined approach are considered to be standard spondylolisthesis management. The treatment of severe slippage in childhood remains the challenge. In prospective study the authors evaluated the patients with dysplastic spondylolisthesis of L5 treated by posterior surgery, including posterolateral fusion and posterior interbody L5-S1 autologous fibula fusion with/without transpedicular fixation. The authors operated on 6 patients (5 girls), average age was 13,5 years (10-17) and follow-up 35,8 months (8-68). Posterolateral fusion by means of autografts was used in two cases, allografts were used in 4 cases. Transpedicular fixation was used only in three cases. The clinical and radiological improvement was achieved in all cases. The slip was improved from preoperative value of 57% (50-66) to postoperative value of 43% (26-54). Posterior surgery, consisted of posterolateral fusion and posterior interbody L5-S1 fusion using autologous fibula with/without transpedicular fixation, is a safe option in the treatment of dysplastic spondylolisthesis of L5 in childhood.

Abstract no.: 29737

ANALYSIS OF CLINICAL RESULTS AFTER MOBILE-BEARING TOTAL KNEE ARTHROPLATSY IN EGYPTIAN PATIENTS (4 YEARS FOLLOW UP)

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Background: An improved functional performance of the knee after total knee arthroplasty is depended on the prosthesis design. **Aim:** The aim of this study to evaluate the results of mobile bearing total knee arthroplasty PCL retaining (Rotating platform) design. **Material and Method:** Prospectively, the clinical results of 62 mobile-bearing (Rotating Platform) total knee replacement with a mean follow-up of 4, 1 years (rang; 2.5 – 6 years) were analyzed. All patients were operated in Tanta University Hospital. **Results:** At latest follow-up the clinical outcome were statistically significant improved from preoperative values, American Knee Society Score (AKSS) from 15.7 to 93.4 points, function score from 34.6 to 83.6 points, range of motion from 68° to 110°, lower limb alignment from 9.5° varus to 4.9° valgus, and pain scores from 3.3 to 45.7 points. None of knees was revised because of aseptic loosening, polyethylene wear, and/or dislocation. **Conclusion:** This study demonstrates significant clinical improvement after implantation of the mobile-bearing (RP) total knee arthroplasty in Egyptian patients.

Abstract no.: 29749

**DOES PREVIOUS FAILURE IMPACT UPON SUCCESSFUL TREATMENT
WITH THE PONSETI METHOD?**

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This paper examines the outcomes of 147 patients, 237 feet, who were treated at the Chelsea and Westminster Ponseti clinic between 2002-2009 representing one of largest series of patients outside the University of Iowa; the home of the Ponseti method. It compares the differences between patients who initially presented to Chelsea and Westminster, to those who had undergone previous treatment elsewhere, in terms of tenotomy rate, casts required to achieve correction, recurrence rate and requirement for surgical correction of. The patients who had undergone previous treatment had less severe deformity at presentation, Pirani 3.9 vs 4.9 ($p<0.001$) and required less casts to achieve initial correction, 3.0 vs 3.8 ($p<0.0001$.) The previously treated patients had significantly poorer outcomes in terms of recurrence rates, 35/113 vs 12/124 feet ($p<0.0001$), the need for tibialis anterior tendon transfer (20/113 vs 2/122 $p < 0.0001$) and the rate of extensive soft tissue release (7/113 vs 0/122 $p=0.0051$.) This is the first study to demonstrate differential outcomes in newly presenting and previously treated cases of CTEV, highlighting the importance of early referral to specialist centres.

Abstract no.: 29750

SPINAL CORD INJURY IN L1-L2 DUE TO FIREARM PROJECTILE WITH NEUROLOGIC RECOVERY

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Objetive: To present a case with spinal cord injury due to firearm projectile with accommodation in spinal canal between the fist and second lumbar vertebrae, with initial neurologica injury and evolving to important neurological recovery. Material: Female patient 16 years old, suffered agression with firearm projectile with inlet in the prerrenal right zone, with accommodation of the ogive in the spinal canal in L1-L2, checked by x-ray and CT with and image of the ogive with occupation of the 70% approximately. On admission, intense burning pain, lost of neurologic functions below the sensitive and motor level of L2, with paraplejia, lost of anal and bladder sphincter control, starting medical treatment with NACSIS II, and surgical treatment at 8 hours after the injury consisting in laminoplasty of L1-L2, Durectomy and localization and removal of the warhead. Dura reconstruction and closure using Beriplast, recolocation of the posterior complex, medical management with analgesic, antibiotics and surveillance. Presenting after 72 hours neurologic recovery and after 6 months with almost full recovery of sphincters and as a walk sequel lost of right foot eversion due to right peroneal muscle palsy. Conclusions: The action of the early surgery of liberation and reconstruction of the dura represents a high possibility of being the principal factor of recovery. The perform of the exeresis of the warhead was due to the presence of intensive and uncontrollable neuropatic pain. This case proposed that the early surgical treatments in firearm projectile injury in spinal cord can offer a chance of recovery.

Abstract no.: 29751

MASTERING DHS: AFFORDABLE COMPUTER-BASED SYSTEM FOR DHS TRAINING IN VITRO

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The DHS (Dynamic Hip Screw) procedure is most commonly done by junior doctors. However, this procedure is technically demanding, with 4-12% risk of implant failure, which is a serious complication. A major reason of the implant failure is the incorrect positioning of the implant during surgery. Hence, the procedure requires high level of Hand, Eyes and Brain coordination. Some courses allow trainees to practice on dry bones. Those courses are very expensive and usually provide only one chance to do this procedure, which is not enough. We present a computer-based training system to facilitate a safe training to improve the Hand, Eyes and Brain coordination of trainees. The system is based on cheap and off-shelf components, which are affordable, and needs minimum setup effort and knowledge. This makes it suitable, not only for teaching/educational institutions/hospitals, but also for individual trainees to acquire their own training system. The system provides a range of visual and quantitative feedback information and measures, such as position, orientation, insertion point, and depth of drilling. Moreover, the system provides the AP and Lateral views, similar to the real DHS procedure, which increases the trainee's experience. This simple computer device is providing the hand, eye and brain coordination to make the trainee able to place the guide wire in the perfect desired position in the first attempt. This is envisaged to contribute to reducing the failure rate of the DHS procedure. This means better treatment for patients, less costs for the NHS.

Abstract no.: 29753

**ACETABULAR COMPONENT REVISION FOR ASEPTIC LOOSENING
AFTER CEMENTED TOTAL HIP ARTHROPLASTY – A LONG TERM
FOLLOW UP STUDY**

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Introduction: Between the most common problems following cemented total hip arthroplasty is aseptic loosening of the acetabular component, frequently with an important loss of bone stock, further increasing the difficulty of revision interventions. This study was conducted to evaluate the long term results of cemented total hip replacement, mainly assessing aseptic loosening of acetabular cup. **Material and method:** 1521 cemented THA were performed in our clinic between 1995 and 2001, from which we selected 105 patients that were followed for a minimum of 10 years. Mean age was 62 years (49-74), with 65 female and 40 male patients. Mean follow-up was 12 years (8-14). Patients were assessed clinically and radiologically. Aseptic loosening was diagnosed based on radiological findings of bone resorption around the acetabular component. **Results:** The overall rate of survival of the acetabular component was 95.6% at 5 years and 89% at 10 years. Preoperatively, the mean Harris hip score was 46 points (25-69) and at the last examination it was 85 points (62-95). Results were excellent and good in 77 cases (73.4%), satisfactory in 24 cases (22.8%) and unsatisfactory in 4 cases (3.8%). 12 patients needed revision surgery: 10 cases (83.3%) for aseptic loosening of the acetabular component and 2 cases for recurrent dislocation. Bone resorption was most significant in Grün zones 2 and 3. **Conclusions:** Aseptic loosening of the acetabular component affects the longevity of cemented total hip replacements. Early diagnosis is important to avoid further bone loss.

Abstract no.: 29754

HIP FRACTURE PATIENTS WITH RENAL IMPAIRMENT - IS OUTCOME AFFECTED?

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Introduction: The outcome of renal impairment in hip fracture patients was investigated.
Materials and methods: A retrospective study was undertaken in 59 consecutive hip fracture patients admitted to our unit. Demographic data and clinical data of the patients were obtained including pre-operative and post-operative biochemical blood tests results, and we looked at the mortality rate. **Results:** There were 59 hip fracture patients. 44 patients (group 1) were alive at 30 days, and 15 patients (group 2) were dead at 30 days. The patients were age-matched with a mean age of 79.3 and 79.7 years in group 1 and 2 respectively. 29 patients underwent hip hemiarthroplasty, and 30 patients had hip fixation. Pre-operative and post-operative mean serum urea were significantly higher in patients who died within 30 days of operation compared with those alive (pre-op 10.2 vs. 6.7 mmol/l [$p=0.001$], post-op 12.1 vs. 6.4 mmol/l [$p=0.0001$]). The concentrations of pre-operative and post-operative mean sodium and potassium levels were not significantly different between the 2 groups. **Conclusion:** Hip fracture patients with elevated urea are at risk of increased mortality. It is important to have clinical strategies for early identification of these patients, and instigation of cautious management of fluid and electrolytes balance to help improve their outcome.

Abstract no.: 29756

EXTERNAL SCELETAL FIXATION AS A RATIONAL METHOD FOR INITIAL TREATMENT OF OPEN DIAPHYSEAL FRACTURES IN POLYTRAUMATIZED PATIENTS

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INTRODUCTION: reconstruction of bone continuity and soft tissue is usually performed as a staged procedure in polytraumatized patients as well as in patients with open fractures. Good result can be expected in adequately evaluated patients who were subjected to adequate protocol of treatment. External skeletal fixation with unilateral frame is used as a initial treatment modality that offers either possibility to be converted in other method of treatment or used as a definite method. **MATERIALS AND METHOD:** between 2000 and 2006 we treated 20 polytraumatised patients who had open fracture of the long bone Gustillo type II and III. **RESULTS:** The fracture union happened in 19 patients. In 4 patients external skeletal fixation was used as the only modality treatment, 16 patients were subjected to another treatment modality out of which 12 patients were treated surgically and 4 nonsurgically with Sarmiento cast. . **CONCLUSION:** external skeletal fixation is a rational method in treatment of open diaphyseal fracture in polytrauma due to the fact that it is minimally invasive, provides good initial stability and can be easily converted into another surgical modality as well as non surgical.

Abstract no.: 29758

SHORT TERM CLINICAL AND RADIOLOGICAL RESULTS OF TOTAL KNEE ARTHROPLASTY WITHOUT PATELLAR RESURFACING

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Purpose: Currently patellar resurfacing is no longer considered a routine step in total knee arthroplasty. In this study we evaluate the short term results (mean follow-up of 1 year) of total knee replacement without patellar resurfacing. Materials and method: We studied a number of 20 patients on whom we performed total knee arthroplasty between 2008 and 2009, without patellar resurfacing (12 female patients, mean age 64 years – range 59 to 68). AP and LL views were obtained preoperatively and at 1, 6 and 12 month postoperatively. We used the preoperative radiographs for determining the Ahlbäck stage of knee arthrosis. Postoperatively we assessed the presence of radiolucent lines and prosthetic component migration. Lysholm and Knee Society Scores were determined preoperatively and at the above mentioned postoperative intervals. Results: On radiological assessment we found 15 cases of Ahlbäck stage IV gonarthrosis and 5 cases of stage V. The last follow-up examination showed no cases of implant migration and no radiolucent lines. The Lysholm score and the Knee Society Scores showed significant increase in all 20 individuals, from a preoperative median of 49.0 ± 10 points to a median of 87.0 ± 8 points at 12 month postoperatively, and from a mean of 98 ± 12 points to a mean of 188 ± 7 points respectively. Conclusions: Our results are consistent with those of recent studies demonstrating the short term efficiency of total knee replacement without patellar resurfacing, still the need for patellar resurfacing in total knee arthroplasty remains a controversial issue.

Abstract no.: 29760

RESULTS OF ACETABULAR REVISIONS WITH BONE SUBSTITUTES

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We retrospectively reviewed a number of 42 patients on whom revision THR was performed between 2003 and 2010, using an acetabular reinforcement device and morselized bone grafts for treating large acetabular defects, and cemented components were inserted. Morsellised grafts were used in 30 cases, and in 12 cases we used a mixture of autologous bone chips and artificial bone consisting of bioactive glass (BoneAlive – 1.5-3 mm in diameter), in a 50:50 ratio. Mean age at the time of revision was 64 years (49-72), with 33 female and 9 male patients. Acetabular defects were classified according to Paprosky. Clinical and radiological evaluation was done preoperatively and at 3, 12, 24, 36 months postoperatively. The radiographs were reviewed for evidence of graft incorporation, radiolucent lines, component migration and hardware failure. Mean follow up was 28 months (6-42). We found Paprosky type-II defects (cavitary bone loss) in 17 hips (40.5%), type-III defects in 25 hips (59.5%). A total of 40 cases showed bony incorporation, demonstrated by the presence of clearly seen trabeculae crossing the graft-host junction. In 3 cases (7.1%) we found evidence of progressive radiolucency at the bone-cement interface, indicating component migration. Although asymptomatic, these patients are considered 'at risk' and remain under close review. There was no case of hardware failure. Patients treated with morsellised bone mixed with bone substitute presented a higher rate of early osteointegration, but the results compared to those of the group treated with morsellised bone did not differ significantly.

Abstract no.: 29761

PROXIMAL HUMERAL FRACTURES DUE TO BLUNT TRAUMA CAUSING SKIN COMPROMISE

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Open fractures of the proximal humerus are rare due to the thick soft-tissue envelope provided by the deltoid muscle which protects the overlying integumental layer from penetration by fracture fragments. To our knowledge there are no previous reports of open proximal humeral fractures related to blunt trauma. Over a 15-year period we identified 16 patients (median age 60.5 years, range 31 to 86 years, 8 males, 8 females), who sustained a proximal humeral fracture with skin compromise after a blunt shoulder injury. These patients comprised 0.2 percent of proximal humeral fractures treated during this time period, and we estimated that the overall prevalence of open proximal humeral fracture was 0.19 per 100,000 person-years in our local population. Two patterns of injury were identified: in 10 patients there was clinically-detectable skin penetration at the time of the original injury, whereas the other 6 patients initially had closed injuries. These 6 patients had fracture fragments penetrating the muscular envelope to lie in a subcutaneous position, which produced either early skin tethering (2 patients) or delayed skin penetration and sinus formation (4 patients). The pattern of injury to the soft-tissue envelope and the fracture pattern were similar for all injuries. The treatment of these injuries was determined by the initial severity of the soft-tissue injury and the medical status of the patient.

Abstract no.: 29763

CANCELLATION OF ORTHOPAEDIC TRAUMA - CHANGING ATTITUDES

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Introduction: Cancellation of orthopaedic trauma cases is a major problem, particularly pertinent to proximal femoral fractures. Evidence shows early operative intervention has a positive impact on outcome for these patients and guidelines advise surgery within 24 to 48 hours.

Aim: To establish which cases are cancelled from orthopaedic trauma lists, the impact of cancellation and changes over time in light of changing attitudes to prioritisation.

Patients and Methods: 3170 trauma cases were retrospectively reviewed from 2 discreet 10 month periods (2006 and 2009) at a typical District General Hospital. Diagnosis, reason for cancellation, subsequent operative delay and length of stay were recorded and analysed. **Results:** 100/1356(7.4%) cases were cancelled in 2006, compared to 58/1814(3.2%) in 2009. This difference was statistically significant ($p < 0.0001$). Less proximal femoral fractures were cancelled in 2009 (22 vs 49 $p < 0.0001$). Of the cancelled proximal femoral fractures, fewer were for 'avoidable' reasons in 2009 (27.3% vs 42.9%). Fewer were cancelled due to pharmacological clotting problems and untreated anaemia in 2009. Cancelled proximal femoral fractures incurred a greater delay to surgery and length of stay compared to other trauma. **Conclusion:** Our findings suggest proximal femoral fractures have recently been given increased priority within orthopaedic trauma. After highlighting common reasons for avoidable cancellation from the first cohort, we have shown this can be avoided by improving preoperative care. Cancellation of orthopaedic trauma remains an issue, with serious consequences, but in our experience this problem can be contained.

Abstract no.: 29765

**BIOMECHANICAL CONSEQUENCES OF ADJACENT SEGMENT
LUMBAR FACET JOINT OSTEOARTHRITIS AFTER POSTERIOR
LUMBAR INTERBODY FUSION**

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Our goal was to evaluate the development of osteoarthritis in the neighboring segment after posterior lumbar spine interbody fusion procedures with pedicle screw fixation for treatment of spondylolisthesis. The biomechanics of the lumbar spine alters as neighboring segment osteoarthritis progresses, which impairs long-term outcome. Between 1992 and 2002, we treated 154 patients (81 females, 73 males) with PLIF and pedicle screw fixation. Their mean age at the time of surgery was 40.5 years. The mean follow-up period was 13.2 years. Treated disorders included degenerative and isthmic spondylolisthesis L5-S1. The follow-up examination included the Oswestry Disability Index (ODI), physical and radiological assessment. Pre- and postoperative radiographs and CT examination were analyzed to assess degenerative changes. Intervertebral disc heights were measured before and after surgery. The ODI before and after surgery showed a marked improvement from average 358 to 224 points. The average outcome index rose to 238 after five years and 286 at ten years time due to degenerative pathology in the neighboring segments. On the x-ray and CT examination progressively increasing facet joint osteoarthritis, intervertebral space narrowing and increase in the intersegmental lordosis of the neighboring segments was seen over the years. All intervertebral disc heights adjacent to the fusion decreased after surgery ($P < 0.05$). Although at postoperative follow-up, patients had significantly better scores for both pain and daily function, after ten years the benefits were reduced. The rigid interbody fusion increases the mechanical stress on the surrounding segments which leads to the proliferation of degenerative pathology.

Abstract no.: 29767

IMPORTANCE OF THE CENTER OF ROTATION IN TOTAL HIP ARTHROPLASTY FOR DEVELOPMENTAL HIP DYSPLASIA

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Introduction: Developmental hip dysplasia implies a deficient acetabulum, small and malrotated femur, and shortened lower extremity. A high centre of rotation decreases the lever arm of the abductors, with higher joint-reaction forces – thus anatomic restoration of the center of rotation is of major importance for implant survival. Anatomical (medial, distal, anterior) position of the cup is yielded by reconstructing the acetabulum with structural grafts or medializing a smaller component in the true acetabulum. We studied the outcomes of total hip replacement with medialisation of a cementless press-fit cup in patients with osteoarthritis secondary to hip dysplasia. **Methods:** We selected 41 patients, treated with 44 cementless total hip arthroplasties in our clinic between 2005 and 2009 (mean age 43 years, 33-52). Mean follow-up was 3.7 years. For acetabular reconstruction, a cementless press-fit cup was medialized to ensure good primary stability. Radiographs were analyzed using Hodgkinson's criteria; clinical evaluation used the Visual Analog Scale (VAS) and Harris hip score. **Results:** Radiological evaluation showed the center of rotation medialized by 5-25mm and the acetabular component placed 2-7mm medial to the Köhler line. One acetabular component showed signs of loosening on the outer 1/3 at the last follow-up. Mean Harris hip score increased from 44 preoperatively to 92 at the latest follow-up. VAS results improved from 7.2 to 1.5. **Conclusions:** Although we evaluated a relatively young patient population, very good results were obtained when the hip joint center had been properly restored, showing the importance of the medialisation technique.

Abstract no.: 29769

THE IMPORTANCE OF SERUM AND SYNOVIAL MMP-8 LEVEL IN THE EARLY DIAGNOSIS OF KNEE OSTEOARTHRITIS

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The matrix metalloproteinases family play an important destructive role in the osteoarthritic cartilage. Some of the proinflammatory cytokines, like TNF \square and IL-6 are putative triggers for MMP-8 production in the inflamed joint and might be of prognostic interest in conjunction with the metalloproteinase levels. 84 individuals (57 males, 27 females) who underwent arthroscopy of the knee joint due to different stages of osteoarthritis ($n=48$, $45,21 \pm 2,60$ yrs) and traumatic meniscal lesions ($n=36$, $37 \pm 2,87$ yrs) have been investigated. Venous blood and synovial fluid samples have been drawn in order to determine the levels of MMP-8, TNF \square and IL-6. Individual subjective scores and IKDC scores have been correlated to the level of these soluble factors. Results: we measured higher levels of serum and synovial MMP-8 both in osteoarthritis and the trauma subgroup than in controls. There was no correlation between serum and synovial levels of MMP-8. Serum MMP-8 showed a significant negative correlation with Q1 and Q7 scores (highest level of activity without pain, $p=0,037$ and $p=0,041$, respectively). Synovial MMP-8 could be correlated to the Q3 score (pain severity, $p=0,029$), Q6 score (level of joint blockage, $p=0,040$) and IKDC score ($p=0,048$). We think that serum and synovial MMP-8 levels are of diagnostic and probably prognostic interest in osteoarthritis of the knee. Moreover, a „biological standardization” could have a therapeutic importance in this disease, especially in the mirror of pursuit for MMP inhibitor drug development.

Abstract no.: 29771

AN UNUSUAL COMPLICATION OF SWANSON IMPLANT ARTHROPLASTY IN THE PROXIMAL INTERPHALANGEAL JOINT OF THE HAND

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Summary: Restoring motion and alleviating pain are the primary goals of proximal interphalangeal joint (PIPJ) replacement arthroplasty. The Swanson hinged silastic spacer remains the most common implant for PIPJ reconstruction, and is particularly useful in patients with post-traumatic and degenerative arthritis. **Discussion:** Restoring motion and alleviating pain are the primary goals of PIPJ replacement arthroplasty. The hinged silastic spacer remains the most common implant for PIPJ reconstruction, particularly in the rheumatoid patient, in whom 90% 10-year survivorship has been reported. The primary stabilizing factors of the PIPJ is the bicondylar geometry of the articulation and the radial and ulnar collateral ligaments. The bony resection required for the proximal phalangeal head sacrifices the PIPJ radial and ulnar collateral ligaments, thereby causing the silastic to become vulnerable to high pinch force loads seen at the index and long finger PIP joints. Hence, silastic joint arthroplasty is generally not recommended for index or long fingers, particularly in active individuals.. Joint arthrodesis as reported here is an unusual complication. **Conclusion:** Swanson implant arthroplasty is reasonable as a PIP joint replacement in those patients needing pain relief, particularly in patients with post-traumatic and degenerative arthritis. It appears to be less successful in cases of RA, the main reason for the poor results in the latter group being the unsatisfactory range of motion.

Abstract no.: 29773

CALORIMETRIC INVESTIGATION OF NORMAL AND DEGENERATIVE HUMAN MENISCUS

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Thermoanalytical techniques measure the change in physical or chemical properties of the sample as a function of temperature. The main purpose of this study was to characterize the altered metabolism in meniscus matrix composition during osteoarthritis. Patients with different degree of meniscal degeneration were chosen for our investigations to find correlation between the enthalpy changes and the severity of disease. The calorimetric properties of samples were determined by DSC method. Samples were heated from 0 to 80 °C. The heating rate was 0.3 °C/min, sample volume was 40 ml. The enthalpy change of the process initiated by the temperature change showed marked difference between the normal and pathological groups. With the rise of temperature an endothermic reaction was observed in all of the cases. Change in the enthalpy was observed in normal cartilage as 1632.48 J/g (SD = 50.55). In case of early degeneration a greater change at 1707.83 J/g (SD = 112.46), while in the severely degenerated samples at 1677.30 J/g (SD = 182.48) was measured. The newly established calorimetric protocol was suitable for compositional thermoanalytical study of human meniscus samples. Our results showed that complex deviations from the normal matrix composition during degeneration correlated with changes in thermal properties. All samples that were extracted for this study were obtained during live surgeries. This new method proved to be suitable for the thermoanalytical investigations. A torn meniscus seems to be strong risk factors for the development and progression of knee osteoarthritis.

Abstract no.: 29776

**EFFICACY OF ARTHROSCOPIC DEBRIDEMENT IN THE TREATMENT
PROTOCOL OF KNEE OSTEOARTHRITIS**

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Aim: Arthroscopic debridement is a well-established method for the operative management of symptomatic knee osteoarthritis. We evaluated a series of patients with incipient knee osteoarthritis treated with arthroscopic debridement. **Methods:** A number of 52 patients with mild grades of knee osteoarthritis (radiological Ahlbäck stages I-II) were treated by arthroscopic debridement, consisting of the excision of unstable condral flaps and meniscal lesions, without chondroplasty. Mean age was 42 years (29-44), with 30 male and 22 female patients. Evaluation (clinical and subjective) was based on the Oxford Knee Score and the Knee Injury and Osteoarthritis Outcome Score (KOOS) questionnaires and the Hospital for Special Surgery Score (HSSS), used prior to surgery and at the 3, 6 and 12 months follow-up evaluations. **Results:** In 45 patients (86.5%) pain relief and functional improvement were observed at 3 and 6 months post-intervention. Mean Oxford Knee Score improved from 29 preoperatively to 44 at the last follow-up visit. Mean KOOS value increased from 65 to 91 at 3 months, remaining at 82 at 6 months, then it decreased to 76 at the 12 months follow-up visit. At 12 months, the HSSS was as follows - good results - 42 cases, satisfactory results - 9 cases, poor results - 1 case. **Conclusions:** Patients with mild to moderate osteoarthritis of the knee can benefit from arthroscopic debridement, with pain relief and improved functional outcomes in the first 6 months after the procedure. Although our study had a short-term follow-up period, our clinical results are encouraging.

Abstract no.: 29781

ELEMENTAL AND STRUCTURE INVESTIGATION OF A POLYMETHYLMETHACRYLATE BONE CEMENT HIP SPACER AFTER REMOVAL FROM A HUMAN PATIENT

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In modern orthopaedic practice antibiotic containing polymethylmethacrylate (PMMA) bone cements are frequently used both to bind implants to bone and also as a temporary spacer during the eradication of infection after removal of an infected prosthesis. We have studied the changes in microscopic structure and the elemental composition of a gentamicin containing PMMA bone cement hip spacer after removal from a human patient's hip joint following a period of 45 days after its insertion during an infection-related revision hip surgery. By using scanning electron microscopy combined with energy-dispersive X-ray spectroscopic analysis (SEM/EDS) we have imaged and identified the building blocks of the spacer material, and additionally, have detected calcium in the sample. Calcium was not present in the control sample. This raises the need for further study on the extent and quality of calcium binding on PMMA. With X-ray fluorescence analysis we have measured the sulphur content on surfaces of segments from different depths within our specimen in order to estimate their gentamicin sulphate concentration, and have found a gradually declining gentamicin sulphate concentration from the center to the surface of the specimen. The corresponding scanning electron microscope (SEM) findings have shown shrinkage of the gentamicin particles both in deep and superficial layers of PMMA matrix.

Abstract no.: 29784

DEEP VENOUS THROMBOSIS PROPHYLAXIS WITH NADROPARIN IN KNEE ARTHROSCOPY

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Introduction: Because of the use of a tourniquet, arthroscopic procedures on the knee are associated with a risk of deep venous thrombosis (DVT) and pulmonary embolism (PE). Prevention methods include early mobilization (active, passive) as well as pharmacological methods. We evaluated the efficacy and safety of using nadroparin for DVT and PE prophylaxis (during hospitalization and after discharge) on a group of patient that had arthroscopy. **Material and method:** We studied a group of 45 patients, the average age being 59 years (47-68). The patients underwent an arthroscopic procedure of the knee – the diagnoses were synovitis and meniscal lesions, treated by synovectomy and partial meniscectomy, in lumbar anesthesia. Nadroparin was administered in a unique dose of 0.4 ml daily (3800 UI anti-Xa, no weight-related dose adjustment was needed as patients had a weight of 50-70 kilograms), first dose administered at 12 hours preoperatively, after which patients received 0.4 ml s.c., q.d., for 20 days. Patients were mobilized from the first postoperative day, and weight bearing was allowed. Clinical evaluation was performed on each patient, and on those with clinical findings that suggested a DVT, a Doppler echo examination was performed. **Results:** Neither one of the patients developed a DVT during the hospitalization period or up to 6 weeks postoperatively. There were no allergic reactions, thrombocytopenia or spinal haematoma. **Conclusions:** We found that nadroparin administrated as a single 0.4 ml s.c. dose daily is efficient in preventing DVT in patients with knee arthroscopy.

Abstract no.: 29785

TIP TO APEX DISTANCE IN DHS FIXATION IN A DISTRICT GENERAL HOSPITAL

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Dynamic hip screw is still one of the most widely used devices for the fixation of extra-capsular neck of femur fractures. The tip to apex distance has been shown to be the most reliable predicting factor of screw cut-out. A distance less than 25 mm is generally predictive of a successful result

OBJECTIVES: The purpose was to assess the position of the lag screw, performed in a district general hospital and to assess if the principle of tip to apex distance is put into practice

METHODS: The initial study was performed retrospectively. Using the trauma theatre logbook, all the patients that underwent DHS fixation over the period of 4 months between January and April 2009 were identified. In total, 17 patients underwent DHS fixation. Their post-operative radiographs were studied.

The most reliable predictor of mechanical failure in a DHS is the tip to apex distance (TAD). This measurement is the sum of the distance from the tip of the lag screw to the tip of the femoral head on the anterior-posterior and lateral intra-operative radiographs allowing for magnification

RESULTS: Average tip apex distance was 18.77 . Of the 17 patients studied two patients had a tip apex of over 25. Our results compare favourably with other teaching institutions. A satisfactory standard of fracture reduction and screw position was attained.

CONCLUSION: Education regarding:-Importance of fracture reduction and optimal screw position-Consequences of sub-optimal screw position. Regular practical workshops for junior surgeons. Further study in six months after implementation.

Abstract no.: 29789

DESIGN OF SUPPORTIVE TECHNIQUES FOR ORTHOPAEDIC REHABILITATION

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Disability often occurs after locomotive diseases and accidents which manifests in hindering the daily activities or in the limitation on the participation. After the successful orthopaedic rehabilitation the affected person can either continue his original work or engage in work as a disabled man. Supportive techniques are shown in the presentation based on own ideas which can be used in conjunction with other active rehabilitation methods to help disabled people carry out daily activities and return to work. The described instruments can also be used in the initial stages of orthopaedic rehabilitation even with the existence of weak muscle strength. They make the therapy more interesting and varied. Some of the instruments develop the upper limb function through increasing the range of motion of the shoulder girdle and shoulder joint function and the muscle strength. The other part develops the hip and knee joints. The practices go beyond the method of physiotherapy because the movements carried out this way always help a useful exercise and activity be carried out. The size of the assets, their placement can be determined appropriately for the users based on antropometric joints. Antropometry deals with the physical characteristics of the human body. The environment has to be adjusted to people's needs in the course of planning. This is only possible knowing the dimensions of the human body and its motion.

Abstract no.: 29791

TREATING HIP FRACTURES IN CENTENARIANS - ARE WE DOING ENOUGH?

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Background: The centenarian is one of the rapidly growing segments of society. There were around 10000 centenarians in 2010 in the UK and 25% of birth now is expected to live 100 years. **Patient and Methods:** Hospital database was used to identify centenarians who were admitted with hip fractures at a DGH. They were divided in 2 subgroups: Group 1- before dedicated geriatrician care available and Group 2- period after which dedicated full time geriatrician care was available. The treatment outcomes were studied in relation to residential status, walking ability, delay in operation and mortality. **Results:** We had 28 patients from 2001 to 2010 of which 25 were females with average age of 101.8 years (range 100-105). 11 of these patients were from care homes, 6 from nursing home and 10 from their home. There were 15 intracapsular and 13 extracapsular fractures. The average delay in surgery in group 1 was 3.3 days (range 1-10days, n=15) and in group 2 was 2.5 days (range 1-7 days, n=13). 30 day and 120 day mortality in group 1 was 46.6 and 73.6 and group 2 was 30.7 and 69.1 respectively. 30 day mortality in the 2 groups was statistically significant but 120 day mortality was not. **Discussion:** Fracture neck of femur in centenarians could be a preterminal event. Improved perioperative care with a dedicated geriatrician input results in improvement in 30 day mortality but does not appear to influence long term outcome.

Abstract no.: 29796

SUBCLAVIAN ARTERY THROMBOSIS FOLLOWING PLATING AND BONE GRAFTING OF NON-UNION OF FRACTURE CLAVICLE – A CASE REPORT

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Fractures of clavicle are common accounting for 5% of all fractures. These fractures are usually treated conservatively. Indications for open reduction and internal fixation include acute fractures with neurovascular compromise, tenting of the skin, patients with symptomatic delayed union or established non-union and floating shoulder. We report a rare case of subclavian artery thrombosis due to external pressure from consolidated callus at 13 weeks postoperatively in a 35 years old gentleman who had fixation of the symptomatic non-united left clavicular fracture using reconstruction plate with bone graft mixed with hydroxyapatite coated (HAC) granules. The authors emphasize the need for the attending physician to be aware of this rare, delayed but potentially limb threatening complication, which can happen after internal fixation and bone grafting.

Abstract no.: 29798

**TREATMENT OF VERTICALLY UNSTABLE INJURIES OF THE PELVIS
(TYPE C ACCORDING TO AO/OTA CLASSIFICATION)**

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The study is based on the analysis of the results of surgery on 34 patients with vertically unstable injuries of the pelvis. Two following major methods of operative treatment were used: external fixation and combination of external and internal fixation. According to characteristics of posterior part of pelvis injuries patient were distributed as following: 19 patients with rupture of sacro-iliac joint, 15 patients with fracture of sacrum. In 18 patients injuries were associated with neuropathy of plexus sacralis. The apparatus of external fixation as an independent and definitive method of treatment was applied in 8 patients. In six patients the apparatus was applied as a reduction device for the period of surgery, the achieved reduction of posterior parts of pelvis was stabilized with ileo-sacral screws, anterior parts of pelvis were fixed with plates, after that the apparatus was removed. In 15 cases after reduction, ileo-sacral screws were inserted under image intensifier control and fixation of anterior part of pelvis was achieved with the anterior frame apparatus. In 6 patients fixation with circular apparatus was combined with anterior plate. Follow-up long term results were estimated by Majeed scale. In the group of patients with vertically unstable injuries excellent results were achieved in 15 (45%) cases, good - in 10 (30%), satisfactory - in 9 (25%) patients. Application of combined osteosynthesis method allows reducing traumaticity of surgical intervention, to achieve adequate reduction, using a circular variant of external fixation frame, to mobilize the patients or to proceed to the internal fixation.

Abstract no.: 29801

AUGMENTATION OF BONE HEALING IN DELAYED AND NON UNION OF DIAPHYSEAL FRACTURES OF LONG BONES BY PARTIALLY DECALCIFIED BONE ALLOGRAFT

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Auto graft from iliac crest is considered as gold standard for bone grafting to stimulate fracture repair. Dimineralized bone grafts have been used to stimulate fracture union in experimental studies. We report the result of partially decalcified bone allograft in the treatment of delayed and non unions. The partially decalcified bone allograft was prepared in the indigenous bone bank maintained in department of Orthopedics. Allografting was done in 15 patients of delayed (6/15) and non union (9/15) of long bone fracture with mean age 34.80yrs (18 -55 yrs) during 2008 to 2010. The bones involved were humerus (7/15), tibia (6/15), femur (2/15). 13 patients underwent treatment in the form of internal fixation and allografting and 2 patients were operated with modified osteoperiosteal allografting. Thirteen patients achieved union in mean time of 15weeks (12 – 20 weeks). 8 patients had serous discharge from the operative site which subsided in 3 weeks. One patient continued to have pus discharge which required repeat debridement and antibiotics for 6 weeks. The fracture healed in 16 weeks. The partially decalcified bone allograft is economical and equally effective modality for augmentation of bone healing without complication associated with auto graft like donor site morbidity, increased blood loss and increased surgical time.

Abstract no.: 29803

COMPARISON OF PLATE AND CABLE FIXATION ON TUBERCLES FOR FOUR-PART FRACTURES OF HUMERUS TREATED WITH HEMIARTHROPLASTY: A BIOMECHANICAL STUDY

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Loss of the tubercle fixation is a common problem after proximal humerus fractures treated with hemiarthroplasty. 8 to 50 % rate of failure has been reported in the literature. Stable fixation of tubercles should be obtained in order to avoid complications such as nonunion and malunion. In this study, we designed a plate for fixation of tubercles and we compared the plate and cable wire groups on hemiarthroplasty model for four part humeral fractures. Twentyseven sawbones were utilized on four part fracture model. Custom made plates for fixation of tubercles were used in forteen sawbones and cable wire fixations were applied in the rest thirteen. Tubercle displacement and stability were evaluated biomechanically. The loads of failure were similar for both groups. Displacements of greater tubercle in the plate group were lesser than the cable wire group. On the other hand, the lesser tubercle fixations revealed unsatisfactory results even at minor loading levels in the plate group. In conclusion, our plate presented more stable fixation for greater tubercle on hemiarthroplasty model for four part humerus fractures whereas less stable fixation was obtained for lesser tubercle. We think that, our plate may present some superiority especially in osteoporotic patients but should be improved for more stable lesser tubercle fixations. *Acknowledgements: Authors thank to Feza Korkusuz and Emir Birant for technical support. ** This study was supported financially by the Turkish Orthopedics and Traumatology Association.

Abstract no.: 29807

**RATIONALES FOR USAGE OF BIOCOMPOSITE INJECTABLE
COLLAPAN GEL FOR REPLACEMENT OF BONE DEFECTS AND
ACTIVATION OF REPARATIVE OSTEOGENESIS FOR CHILDREN AND
ADOLESCENTS**

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Injectable composite Collapan-gel (containing collagen and synthetic hy-droxyapatite and antibiotics) was injected into the defect of the tibia (40 rats). The defect area was investigated histologically at 15 days and at 1, 2 and 3 months after surgery. At the clinic injectable Collapan gel has been used for 64 patients of child ages for filling bone defects of small sizes in these pathological conditions such as chronic hematogenous and primary-chronic osteomyelitis (especially pockets of hard-localization), tuberculosis, residual bone cyst, eosinophilic granuloma. Ob-servation periods ranged from 3 months to 8 years. Experimental-morphological research showed obvious osteoconductive and osteoinductive properties injectable Collapan gel - the formation of newly formed bone trabeculae occurred already at 15 days after implantation. Later there was an increase of bone mass and its remodeling and maturation with simultaneous resorp-tion of hydroxyapatite Collapan gel. At the clinic without surgical intervention in-jectable Collapan gel promoted the active repair of bone defects and foci of chronic inflammation inaccessible areas and areas of "high risk" (pelvis, spine, growth plate of long bones). In 80% of the cases observed active filling of investigated defects with new bone. Injectable Collapan-gel can be successfully applied for children and adolescents for the replacement of bone defects and enhance the re-parative regeneration of bone especially for difficult approach areas and areas of "high risk".

Abstract no.: 29808

**THE TREATMENT FOR DISPLACED INTRACAPSULA HIP FRACTURE
USING ZWEYMULLER TYPE CEMENTLESS BIPOLEAR
HEMIARTHROPLASTY IN ELDERLY PATIENTS**

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Background: Surgical management for displaced intracapsular fractures in osteoporotic elder patients has been controversial. The purpose of this study is to evaluate the clinical results of the treatment for the elderly patients who had undergone cementless hemiarthroplasty to displaced intracapsular hip fracture. **Materials and Methods:** Hemiarthroplasty had been demonstrated in 93 patients for intracapsular hip fractures using Zweymüller cementless prosthesis between July 2007 and April 2010 in our institute. Among them, 68 patients met the criteria that minimum follow-up term should be more than 6 months. The average age at the operation was 81.8 years old. The mean period of follow-up was 15 months. We evaluated the postoperative X-ray findings regarding canal flare index (CFI), cortical index (CI), subsidence, spot welds, stress shielding, and radiolucent line. **Results:** On the X-ray findings, the average CFI was 3.87, and the mean CI was 0.48, respectively. One case indicated more than 3mm in subsidence. Seventeen cases revealed radiolucent line in X-ray (24.6%), including 13 case at Gren zone 1(20%), 10 cases in zone 7 (15.4%), and 1 case in circumferential zone. Spot welds were identified 32 cases (46%) and stress shielding was identified in 65 cases (94.2%) in this study. **Conclusion:** Zweymüller prosthesis gave us excellent and promising radiological results in short-term follow-up in elderly patients. However, it was indeed difficult to treat the patients with severe osteoporosis. Correlativity between radiolucent lien, stress shielding and prosthetic loosening were not found in this study.

Abstract no.: 29811

DOXYCYCLINE SCLERODESIS AS A TREATMENT OPTION FOR PERSISTENT MOREL-LAVALLEE LESIONS

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METHODS: 16 patients with persistent (>6 months old) Morel-Lavallee lesions were treated with percutaneous aspiration and sclerodesis using doxycycline solution followed by compression bandaging for 12 weeks. Average age was 41 years. Mean follow-up period was 37.26 months. Average duration of the persistence of the lesion was 13 months. All patients had been intervened previously multiple number of times, average being 3.44 times. The surface area of the lesions averaged 32 x 15 cm. The diagnosis was made clinically. Where ever in doubt due to obesity, an ultrasound guided needle aspiration was done (3 patients). All the aspirated samples were sent for culture.

RESULTS: Out of 16, 3 patients were lost to follow-up after 2 years. All the fluids aspirated were found to be sterile. None of the patients developed infection or skin necrosis. At 4 weeks, 11 patients had complete ablation of the cavity. 4 patients had small patchy areas of fluctuation which was managed with further compression and got resolved by 8 weeks. 1 patient, non-compliant with the compression, had persistent lesion which got resolved with repeat procedure. Long term side effects included tight skin over the anterior thigh in 1 patient and soft contour deformity in 3 patients. **CONCLUSION:** Doxycycline induced sclerodesis of Morel-lavallee lesions is cheap and effective method of treating this difficult entity. Doxycycline being a broad spectrum antibiotic helps prevent infection encountered in some other sclerosing agents. The procedure is very easy to perform and is not associated with any serious morbidity.

Abstract no.: 29812

THE DETECTION OF SLOW WALKING WITH CRUTCHES USING AN ACTIVITY MONITOR

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Activity monitoring (AM) in orthopaedics becomes important for objective clinical outcome assessment. The first days after surgery, patients walk slowly and mainly with crutches, first step-by-step and later on more dynamically. Slow gait makes the distinction of walking from standing/resting, using an AM difficult. Our aim is to examine whether AM is able to detect slow crutched walking. A 3D-accelerometer (64x25x13mm;18g) was attached onto the lateral upper leg. Ten healthy subjects were instructed to walk with crutches a 6.5m distance twice. First they walked step-by-step at very low velocity (0.3-0.5km/h). After standing still for 5 seconds they continued with dynamic walking at low velocity (0.5-1.0km/h). Sensor output was analyzed using specific algorithms, producing number of steps and walking time, if walking was recognized. Those were compared with simultaneous video recordings using mean relative differences (MRD) and correlations (Pearson's,R). Both conditions where recognized as walking. In very slow step-by-step walking a MRD of 2.8% ($R=0.97$) in stepnumber and a MRD of 4.3% ($R=0.99$) in walking time was found. In slow dynamic walking, MRDs were respectively 4.9% (range:0.0%-11.1%; $R=0.88$) and 8.9% (range:0.0%-21.7%; $R=0.97$). This study shows that AM is able to detect slow, crutched step-by-step and dynamic walking. Therefore, the AM can be used to monitor orthopedic patients shortly after treatment, which may improve and objectify clinical evaluations and rehabilitation programs.

Abstract no.: 29813

MEDIAL TIBIA BONE DEFECTS IN PRIMARY TOTAL KNEE ARTHROPLASTY- MATHEMATICAL MODEL: CLINICAL RESULTS AND VIRTUAL ANALYSIS OF A PRESS FIT BONE GRAFTING TECHNIQUE

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Addressing the bone defects during total knee arthroplasty is essential for good outcome. We describe a press fit cantilever technique for slanting peripheral tibial bone defects, using box shaped graft from the proximal tibia cut and inserting it at an angle to the defect bed. A mathematical and clinical study was performed to assess this technique. The mathematical model concluded that for graft of 7 mm thickness placed at angle of 60° to 70° to the defect bed; most of the loading force will act as a compression force with minimal graft deflection. This conclusion was also validated by 1- Dimensional Finite Element Analysis using ANSYS software. Thirty one knees in 27 patients (13 males and 18 females) underwent the above procedure with average follow-up of 24.06 ± 5.4 months (range - 18 to 37 months). The average pre operative alignment was 28 ± 7.2 ° varus that improved to 6.4 ± 3 ° of valgus post operatively. The mean knee and functional score preoperatively were 29.19 and 21.77 that improved to mean 91.5 and 79.03 respectively. Twenty nine grafts united in 3 months and all united by 6 months. There was no collapse, loosening or loss of alignment. This technique is simple to execute with good stability, early graft incorporation and reproducible results.

Abstract no.: 29814

THE USEFULLNESS OF THE KERBOULL CROSS-SHELL IN HIP REVISION ARTHROPLASTY

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OBJECTIVE: To restore the bone stock in hip revision arthroplasty. In order to secure the stability of the revised acetabular cup, and ensure the proper healing of bone grafts, the Kerboull cross-shell was used. **MATERIALS:** Between 2006-2009, 58 patients who underwent surgery at our Department due to aseptic loosening of the acetabular cup, were treated with the Kerboull cross-shell. The group comprised of 51 women and 7 men with an average age of 68 years (range, 42 to 85). **METHODS:** We rebuilt the bone stock using frozen allogenic bone grafts, which we also used to fill out areas of acetabular bone defect. We reinforced the reconstructed bone stock with the Kerboull cross-shell, ensuring that the cross-shell arms fitted snugly against the bone stock. We then cemented an appropriately sized polyethylene acetabular cup into the reconstructed acetabulum. The obtained results were assessed using the WOMAC and Harris Hip Score scales, as well as radiographically, where we assessed acetabular cup position and bone graft healing. **RESULTS:** None of the patients showed signs of acetabular cup loosening; a broken Kerboull cross-shell arm and broken bolts were found in 3 patients (2 men and 1 woman). **CONCLUSIONS:** Our experiences with the Kerboull cross-shell yield encouraging results. This device provides good stabilization of the implanted artificial acetabular cup and aids in healing and remodeling of bone grafts. The surgical procedure requires precise filling of bone defects with impaction bone grafts, and the entire surface of the cross-shell implant must fit tightly against the bone grafts.

Abstract no.: 29816

RESECTION AND REKONSTRUCTION OF PRIMARY MALIGNANT BONE AND SOFT TISSUE SARCOMAS OF THE CHEST WALL

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Introduction: Primary malignant bone and soft tissue sarcomas of the chest wall are exceedingly rare. The aim of this case series was a retrospective analysis concerning the kind and amount of the resection performed, the type of reconstruction as well as the oncological outcome. **Patients and Methods:** Between September 1999 and April 2010 thirteen patients (ten male, 3 female) with a mean age of 50 years (range, 20-78) were treated due to a primary malignant bone or soft tissue sarcoma of the chest wall. Five low grade sarcomas (four chondrosarcomas G1, one fibromyxoid sarcoma G1) were noted as well as eight highly malignant sarcomas (four soft tissue sarcomas G3, two Ewing-sarcomas, one osteosarcoma, and one dedifferentiated chondrosarcoma). **Results:** In all 13 cases wide resection margins were achieved. In eleven Patients ribs had to be resected (mean 3 ribs, range, 1-5), in two of those cases a hemivertebrectomy and a dorsal spinal stabilisation had to be performed. In two further cases the sternum had to be resected. In all 13 cases the defect of the chest wall was reconstructed using meshes. At a mean follow-up of 43 months (range, 1-134) ten patients were without evidence of disease, two patients died of their disease and one patient was lost to follow-up. **Conclusion:** Primary malignant bone or soft tissue tumours of the chest wall should be treated according to the same surgical oncological principles as established for the extremities. Reconstruction with meshes and in some cases musculocutaneous flaps is associated with a low morbidity.

Abstract no.: 29819

CORRELATION BETWEEN THE FACTORS ASSOCIATED WITH METABOLIC SYNDROME AND LUMBAR SPINAL DEGENERATION: AN EPIDEMIOLOGICAL STUDY

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Introduction: The purpose of this study was to elucidate the association between factors related to the metabolic syndrome and lumbar spinal degeneration in healthy subjects.

Methods: Lateral-view lumbar roentgenographs of 817 healthy volunteers (514 women and 303 men; age range: 21 to 86 years) who participated in a health promotion program were analyzed. The lumbar degenerative index (LDI) of 4 roentgenographic components—disc space narrowing, endplate sclerosis, and anterior and posterior osteophyte formation—were determined for intervertebral spaces from L2/3 to L5/S1. In addition, multiple regression analyses were performed to investigate the association between LDI and factors associated with metabolic syndrome in men and women. Statistical significance was defined at $p < 0.05$. **Results:** Age showed a significant positive correlation with LDI, for both men and women. LDI was significantly higher in men aged over 50 years than in their female counterparts. All 4 components of LDI were significantly higher in men than in women. Multiple regression analyses showed that while age and BMI were significantly associated with LDI in men, age and HbA1c were significantly associated with LDI in women. TG, HDL-c, and baPWV did not show a significant association with LDI. **Conclusions:** Gender difference was found in the severity of lumbar spinal degeneration in healthy volunteers. Obesity was a possible risk factor for the process of degeneration in men and glucose metabolism, in women. While age may be the strongest predictor of lumbar intervertebral disc degeneration, metabolic syndrome may be a contributory factor.

Abstract no.: 29821

**A RARE COMPLICATION OF LUMBAR SPINE SURGERY:
PNEUMOENCEPHALUS**

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Pneumoencephalus is an uncommon but serious complication of spinal surgery and its management and physiopathology is not widely recognized. Incidence of symptomatic tension pneumoencephalus secondary to posterior spinal arthrodesis is unknown. We report a rare case of a 41 year old woman with L3-L4, L4-L5 discopathy and left discal herniation L4-L5. A posterior spinal arthrodesis L3-L5, L3-L4 and L4-L5 discectomies and release of the left L5 root, was performed without complications. 24 hours after surgery the patient developed generalized headache, neck stiffness, and dysarthria. MRI revealed a huge pneumoencephalus in the subarachnoid space, predominantly in the left frontal lobe without midline shift, which originates in the lumbar spinal canal. The patient was treated conservatively, featuring 72 hours from progressive neurological improvement, up to clinical and radiological normalization after 7 days. Discussion: pneumoencephalus is a rare but potentially serious complication of spine surgery related in most cases with inadvertent dural tear during surgery. Efforts to understand and reduce complications in medicine, and spine surgery in particular have been hampered as a result of the lack of a meaningful and universally acceptable definition. The complex field of spine surgery has been a particularly challenging area for the development of a consensus to constructively describe these "undesirable/unanticipated developments arising during or out of the delivery of health care."

Abstract no.: 29822

ACUTE TIBIAL TUBERCLE AVULSION FRACTURES IN THE SPORTING ADOLESCENT

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INTRODUCTION: Tibial tuberosity fractures in adolescent are uncommon. We report 8 cases of the fracture occurred after abrupt tension of the patellar tendon in male sporting adolescents. **METHODS:** Records of 8 patients aged 10-17 (mean, 14) years with avulsion fractures of the tibial tubercle presenting to our hospital from April 2002 to September 2009 were studied. Patient age, involved side, injury mechanism, clinical and radiographic records, treatment, complications, and outcomes were reviewed. The Ogden classification was used to establish the radiological type. **RESULTS:** Four patients injured the right side, 3 the left side, and one both sides. They all engaged in sports or active play during the injury. Mechanism of injuries included basketball injury (2), running injury(1), high jump(2), foot ball injury(1), sumo wrestling(1) and baseball injury(1). One fracture was type 1B, 3 type IIA, one type IIB, 2 type IIIA, and one type IIIB. All fractures were displaced with one case of patellar tendon avulsion and one case of meniscal injury, and treated with open reduction and internal fixation, including arthroscopic-assisted techniques in two cases. Two patients presented symptoms of homolateral Osgood-Schlatter's disease before the lesion. The mean follow-up period was 43 (range, 10-93) months. No complications were noted. The results were satisfactory: complete functional recovery, resumption of sport at the previous level and absence of recurvatum. **CONCLUSION:** Displaced fracture of the tibial tubercle is sometimes associated with soft tissue injury. Surgical treatment is indispensable and provides good functional results.

Abstract no.: 29824

A NOVEL METHOD TO MANUFACTURE CUSTOMISED ANTIBIOTIC SPACER

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Rapid prototyping is the automatic construction of physical objects using additive manufacturing technology. It takes virtual designs from computer aided design (CAD) or animation modeling software, transforms them into thin, virtual, horizontal cross-sections and then creates successive layers until the model is complete. The primary advantage to additive fabrication is its ability to create almost any shape or geometric feature. This technique was used to create physical model of the knee joints which required first stage revision surgeries. The prototypes were made of ABS plastic. This prototype is then subject to investment casting using wax. This results in a mould being created in which the cement - simplex was poured with 4.0 gm vancomycin. Once the cement hardened the investment casting mould was broken to retrieve the spacer. This was then sterilised in usual fashion and used in surgery.

Abstract no.: 29825

PSYCHOLOGICAL FACTORS AFFECT THE POSTOPERATIVE GAIT PERFORMANCE OF TOTAL HIP ARTHROPLASTY PATIENTS

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Recovery after total hip arthroplasty (THA) is influenced by demographic and clinical factors. It is conceivable that psychological factors also play a role. This study investigates the effect of psychological factors on gait in THA-patients. Fifteen THA-patients were measured at least once postoperative, at varying times (1day-3 months), resulting in 38 measurements. During one measurement, a 20m acceleration-based gait test, TAMPA, VAS-pain and STAI-state was analysed to evaluate gait, kinesiophobia, pain and state-anxiety experienced at that specific time. General anxiety (STAI-trait) and preoperative gait was measured in 15 preoperative THA-patients. Gait was analysed using specific algorithms producing several parameters (e.g.cadence). Gait was better and STAI-state, VAS, TAMPA was lower at longer follow-up times. Postoperative, correlations were found between gait parameters and STAI-state (R -range [-0.50-0.38], $p<0.05$), TAMPA (R -range [-0.57-0.39], $p<0.05$) and VAS-pain (R -range [-0.70-0.39], $p<0.05$), indicating impaired gait (e.g.slower speed) with increasing state-anxiety, kinesiophobia and pain. All scales significantly intercorrelated. No correlation was found between STAI-trait and preoperative gait. This study indicates that preoperative gait of THA patients is not influenced by general anxiety, but that postoperative gait is affected by pain, kinesiophobia and anxiety experienced at that specific time. Correlations were moderate, but as high as the correlations previously reported between gait and age, which is a strong determinant of gait. This shows the importance to account for psychological factors to evaluate recovery after THA. Future study is needed to further examine these relations.

Abstract no.: 29830

MIDDLE TERM CLINICAL RESULTS OF MICROENDOSCOPIC DISCECTOMY (MED) COMPARED WITH CONVENTIONAL OPEN PROCEDURE FOR LUMBAR DISC HERNIATION

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[Purpose] The microendoscopic discectomy (MED) is a less invasive method of surgery for lumbar disc herniation (LDH). Since 2000, we had started to utilize MED for LDH. Comparing with the conventional open procedure, MED has some advantages, less skin incision and less wound pain. The purpose of this report is to evaluate the clinical results of the MED compared with open method in the cases (postoperative time: from 7 to 10 years). [Materials and Method] 18 patients undergoing MED method and 19 patients undergoing open method as control were included in this study. The choice of the operative method was randomly performed. Clinical results were compared between the groups by operative time, JOA score, postoperative complication, recurrence rate, and instability on the X-ray film. [Results] The average recovery rates of JOA score were 51% in the MED group, and 63% in the open procedure group. There was no significant difference by JOA score.. And recurrence has been found in 5 cases (27%) of MED group, 4 cases (21%) of open procedure group. Instability occurred in 4 cases (22%) of MED group, and in 4 cases (21%) of open procedure group. [Discussion and Conclusion] The MED method has advantages in less invasion and less wound pain. Clinical results are satisfactory, and these advantages also enable short bed rest and short hospital stay. But there was no significance of the recurrence rate and instability rate between two groups.

Abstract no.: 29833

THE EFFECT OF AUDIT ON THE TIP-TO-APEX DISTANCE AND LAG-SCREW PLACEMENT IN DYNAMIC HIP SCREW FIXATION

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Introduction: The Dynamic-Hip-Screw (DHS) is assessed from the Tip-to-apex-distance (TAD) of the lag screw to the femoral apex. A TAD of <25mm is known to have a reduced probability of cutting-out compared to those >25mm. It is considered advantageous to place the lag-screw in the posteroinferior area of the femoral head, whereas the anteriosuperior area typically has poorer quality bone. **Method:** We retrospectively measured the TAD and lag-screw position from the intra-operative radiographs of 107 patients over 18 months. The first cycle analysed 68 patients and the second 39 patients. To avoid magnification error the known DHS lag-screw diameter of 12mm was referenced to standardise the measurements. **Results:** The first TAD average was 18.84mm (8.42–41.39mm), the second average TAD was 15.24mm (6.53–28.53mm); an improvement of 3.6mm (19.2%). In the first cycle, 26.5% lag-screws were sited in the Posterior-inferior area, compared to 17.9% in the second cycle. The proportion of Lag screws placed in the anterior-superior area increased 14%, from 16.17% to 30.7%. The average TAD of the posterior-inferiorly placed lag-screws improved by 4.24mm (21.16%) and those placed in the anterior-superior improved by 5.47mm (34.6%) **Conclusion:** We observed that audit improved the average TAD yet reduced the proportion of lag screws placed in the preferable posterior-inferior area of the femoral head. Although the TAD improved across the cycle, the greatest improvement was observed in the lag screws placed in the less-preferable anterior-superior area.

Abstract no.: 29834

BIOCHEMICAL ANALYSIS OF CYST FLUID IN UNICAMERAL BONE CYSTS: A STUDY OF 22 CYSTS IN 22 PATIENTS WITH ASSESSMENT OF THEIR CLINICAL FEATURES

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Objective: Unicameral bone cysts (UBCs) are benign cystic lesions, mainly seen in childhood. Repeated pathological fracture may occur, and various ways of treatment have been reported. However, little can be definitely said on etiology or on rationale for treatment. We biochemically analyzed the cyst fluid and evaluated the clinical features, to seek a key to pathogenesis and treatment. **Methods:** Between 2004 and 2010, we surgically treated 22 UBCs in 22 patients surgically, and cyst fluid was obtained during the operation. There were 17 male and 5 female patients, and mean age at surgery was 13.2 years (6 to 19). The cyst was located in the calcaneus in 9 patients, in the humerus in 8, and in the femur in 5. Curettage and grafting with bone substitute material was performed in 17 patients, and 5 patients were treated with cannulated pins. Cyst fluid was compared with blood serum obtained preoperatively. **Results:** Secondary procedure was needed due to recurrence in 3 cysts. No recurrence was seen in the calcaneal UBCs. In the biochemical study of cyst fluid, alkaline phosphatase (ALP) concentration was significantly higher than that in the blood serum. ALP concentration of cyst fluid in calcaneal UBCs was significantly lower than that in other sites. **Conclusion:** The cyst fluid is similar to blood serum, but shows signs of increased bone turnover. In calcaneal UBCs, the good prognosis and the lower ALP level in cyst fluid, suggests difference in etiology.

Abstract no.: 29836

**INFLUENCE OF SOCIOPSYCHOLOGIC FACTORS ON THE OUTCOME
OF KNEE AND HIP ARTHROPLASTY**

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Introduction: Psychological and social factors, like anxiety, depression and social support have influence on the surgical outcome. The aim of this prospective study was to investigate the influence of psychosocial factors on the outcome of total knee- and hip replacement. **Methods:** 75 patients with joint replacement completed questionnaires including the Adult Attachment Scale (AAS), the Social Support Questionnaire (F-SOZU-K7), the Hospital Anxiety and Depression Scale (HADS) and the SF- 12. **Results:** In knee patients, a significant relationship between AAS- closeness and the preoperative WOMAC-score of stiffness, HADS- depression and the preoperative WOMAC- score of stiffness, HADS- anxiety and the 3 months postoperative WOMAC- score of stiffness and between the SF- 12 psychological sumscale and the 3 months postoperative WOMAC-score of pain and function. In hip patients, significant relationships between the preoperative psychosocial scores AAS- anxiety and the 6 weeks postoperative HHS- score of function and the 3 month postoperative HHS- score of function and between the HADS- depression and the 6 weeks postoperative HHS- score of pain and totalscore, as well as the 3 months postoperative HHS- score of function could be shown. **Diskussion:** This study shows that psychosocial factors like anxiety and depression may affect knee- and hip-replacement's outcome.

Abstract no.: 29840

**SURGICAL TREATMENT OF BUNIONETT – TAILOR'S BUNION –
METATARSUS QUINTUS VALGUS**

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Authors present the features of the deformity and etiology. The types of deformity were based on the radiological characteristics of the basis by Fallot. Aim of the operation is to restore the normal anatomical relation. The authors have operated 53 cases on the diaphysis and 15 cases on the distal part of the metatarsus. The chosen operation was Scarf osteotomy. The authors exhibit their results. They measured the change of the intermetatarsal angle / IT /. They go into details of the technics of the operation. The results were valued by the American foot and ankle score. Conclusions Taking the radiological staging and clinical features into consideration the operation can be well planned. We suggest the distal part osteotomy when the medial sliding of the head by one third results in a normal IT angle. If major corection is needed diaphyseal or proximal part osteotomy is advisable.

Abstract no.: 29845

CLINICAL RESULTS OF NEW METHOD FOR BENIGN BONE TUMORS IN FEMORA - ARTHROSCOPIC CURETTAGE

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<Introduction> In Nov. 1992 we started ESC (endoscopic curettage) without bone grafting for enchondromas in hand and have got good results. We now perform this procedure for other benign bone tumors. The purpose of this paper is to evaluate the results of this new method for benign bone tumors in femora. <Materials and Methods> 13 patients with benign bone tumors in femora underwent ESC without bone grafting at our hospital from 1994 to 2009. The average age at surgery was 18.4 years-old and the mean follow-up period was 37.9 months. There were six solitary bone cysts, three aneurysmal bone cysts and two chondromas, one chondroblastomas and one fibrous dysplasia. Usually two portals were made with several millimeter skin incisions and fenestrations of cortex bone. Thorough curettage of the tumor was performed using curettes and electrical shaver under endoscopic visualization. <Results > Good visualization through arthroscopy was obtained in all patients. New bone formation was observed by roentgenogram in all the patients 3.0 months after surgery averagely in spite of no bone grafting. <Discussion and conclusion> The advantages of this procedure are as follows; 1. Less surgical insult, 2. No need for bone grafting, 3. Easy to evaluate the remnant of curettage due to magnified observation, 4. Less blind areas than conventional method, 5. No need of immobilization, 6. No need of postoperative rehabilitation with early recovery of function. We conclude that this procedure is one of the good choices for the treatment of benign bone tumors in femora.

Abstract no.: 29853

ANALYSES OF FEMORAL BOWING IN THE 3D-COORDINATE SYSTEM AS A POSSIBLE FACTOR OF CORONAL MALALIGNMENT IN TKA

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INTRODUCTION: Coronal alignment in TKA influences on postoperative clinical outcome. The femoral alignment is determined by distal osteotomy according to a direction of the intramedullary rod. We hypothesized that lateral bowing of femur (LB) correlated with the valgus angle between the distal anatomical axis and the functional axis (VA). In this context, LB was analyzed in our xyz-algorithm. **MATERIALS and METHODS:** 3D-models of 31 femora were reconstructed from CT from patients who underwent CAS-TKA (OA27, RA4). Trans-epicondylar axis was designated as Y-axis. X-axis was set perpendicular to plane defined by epicondyles and center of femoral head. Z-axis was computed as a vector XxY. After cross-sectional contours of femur were extracted along the Z-axis, each ellipse center was calculated, and then proximal and distal anatomical axes were calculated by a least square method. LB was defined as the angle between these 2 axes projected on the YZ-plane. The correlations of LB with VA on the coronal plane were investigated. **RESULTS:** LB and VA were 9.3 ± 1.6 (4.9~12.9) degrees and 7.0 ± 2.0 (4.9~12.9) degrees respectively. LB showed a statistically significant correlation with VA ($p < 0.05$). **DISCUSSION:** Due to femoral bowings, the accuracy of VA we measure on conventional radiographs for distal femoral osteotomy is vulnerable to malrotation and/or flexion contracture. Here LB was demonstrated to vary considerably among patients and to correlate with VA. These results implied that preoperative 3D-planning is essential to reduce frequency of postoperative coronal malalignment.

Abstract no.: 29855

SURGICAL WOUND INFECTION AS A PERFORMANCE INDICATOR IN TOTAL KNEE REPLACEMENT: A COMPARISON OF COMMON DEFINITIONS

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Introduction: The purpose of this study was to assess the agreement between three common definitions of surgical wound infection as a performance indicator in total knee arthroplasty (TKA); (a) the CDC 1992 definition, (b) the NINSS modification of the CDC definition and (c) the ASEPSIS scoring method applied to the same series of surgical wounds. **Methods:** A prospective study of 500 surgical wounds in patients who underwent TKA between May 2002 and December 2004 from a single tertiary centre. **Results:** Mean age of patients was 70+/-11 years, 61.6% were females and mean follow-up was 35.2+/-25.7 months. The mean percentage of wounds classified as infected differed substantially with different definitions: 5.8% with the CDC definition, 3.6% with the NINSS version and 2.2% with ASEPSIS score > 20. When superficial infections (according to CDC category) were included, 5.2% (26) of all observed wounds received conflicting diagnoses, and 1.4% (7) were classified as infected by both ASEPSIS and CDC definitions. When superficial infections were excluded, the two definitions estimated about the same overall percentage infection (2.2% and 2.6% respectively), but there were almost three times as many conflicting infection diagnoses ($n = 14$) as concordant ones ($n = 5$). **Conclusion:** Distinctions in surgical wound infection definitions contribute to notable differences in how infections are classified after TKA. A single definition used consistently can show changes in wound infection rates over time at a single centre. However, differences in interpretation prevent comparison between different centres.

Abstract no.: 29858

ROUTINE HISTOPATHOLOGICAL EXAMINATION IS UNNECESSARY FOR WRIST GANGLION EXCISION

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Purpose: The purpose of this retrospective study was to assess the necessity of routine histopathological examination of the wrist ganglion and its impact on the provisional clinical diagnosis. **Methods:** We retrospectively reviewed consecutive patients who had surgical excision of a wrist ganglion and routine pathological examination of the submitted tissue between May 2008 and May 2010. The medical records were reviewed to obtain patients' demographic data, clinical history, physical examination findings, imaging findings (if ordered), preoperative provisional diagnosis, and pathological diagnosis. Intraoperative findings were assessed from the surgical reports and recorded. The diagnosis on the pathology test order was set as the final decision of the surgeon. We compared the final decision of the surgeon and the definitive diagnosis reported by the pathologist. **Results:** There were 36 female and 21 male patients with a mean age of 27.05 years (range: 6-60). Preoperative diagnosis on the pathology test order was ganglion in all cases. And the reports of pathologic examination of the specimens were ganglion in all cases. **Conclusion:** Further confirmation of the diagnosis in wrist ganglion with pathologic examination seems to be unnecessary and may not be used routinely for wrist ganglia.

Abstract no.: 29862

THE USE OF TEMPORARY HEMIEPIPHYSEODESIS OF THE ANTERIOR DISTAL TIBIAL GROWTH PLATE TO CORRECT EQUINUS IN FLAT TOP TALUS DEFORMITY

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Flat top talus is a nightmare for orthopaedic surgeons dealing with correction of clubfoot deformity. In flat top talus it is not possible to correct equinus position of the foot by performing Achilles tendon lengthening and posterior capsulotomy. Bony procedures like wedge resections of the Chopart joint or calcaneal osteotomies are no real good options in a growing child. The better choice is to perform the surgical correction as close to the deformity as possible. This can be achieved by using temporary hemiepiphyseodesis of the anterior distal tibial growth plate using an eight plate. The technique is simple like in supramalleolar osteotomy. Excellent functional results can be achieved. No plaster cast fixation is needed and it is well tolerated by the patients.

Abstract no.: 29863

RESULTS OF PARTIAL NAIL MATRIX REMOVAL (WINOGRAD TECHNIQUE) IN THE TREATMENT OF INGROWN TOENAIL

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Objective: The purpose of this retrospective study is to evaluate the results of partial nail matrix removal (Winograd's technique) in the treatment of ingrown toenail. **Materials and methods:** We retrospectively reviewed medical charts of 68 patients with 75 ingrown toenails who were underwent surgical correction with Winograd technique between January 2008 and December 2009 in our clinic. For the final follow-up, patients were contacted by telephone calls and completed a telephone questionnaire. Recurrence, cosmetic results and satisfaction of the patients were our major outcome measures. **Results:** There was recurrence in 9 patients (13.2%). The mean recurrence time was 6.7 months (range, 2-12). All recurrences involved the lateral border of the toenail. Cosmetic ratings were statistically lower in female patients ($p=0.005$). The reasons for poor and acceptable cosmetic results were proximal incision scar and narrowing of the nail plate. 66 patients (97%) were satisfied from the treatment. **Conclusions:** Winograd technique is easy to perform, and recurrence rate is acceptable when compared to other techniques in the literature. However, some women were not satisfied with the cosmetic result as it narrows the nailpalte and the difference between two nail bothers them. Female patients should be informed about this consequence before the surgical intervention.

Abstract no.: 29866

**NEUROPATHIC ETIOLOGY IN HALLUX VALGUS DEFORMITY
PRELIMINARY FINDINGS**

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Hallux Valgus is a common deformity. Pressure neuropathy is considered one of the etiologies that amplify the Hallux Valgus deformity. The use of protein gene product 9.5 antibodies and s-100 antibodies for neural cells studies has been implemented in human models for the last two decades, and has been found to be a useful tool in research of intra dermal enervation. The study was designed to explore the correlation between the Hallux Valgus deformity angle measured using x-ray, the severity of the neuropathy by light sensation and vibration thresholds, and the number of neural cells in a defined area of dermal tissue collected routinely as skin biopsy from patients during Hallux Valgus repair surgery. The study group with HV deformity consisted of 22 females and 8 males, ages 23 to 87 years with a mean age of 57.66 years. The control group, with hindfoot pathology, consisted of 19 females and 11 males, ages 27 to 76 years with a mean of 49 years. There was no statistical difference between group's populations regarding gender or ages. There were significant differences in vibration thresholds in the examination determined points – TOE, HV, WEB, and in light sensation measurement findings. A good correlation was found between the two sensation modalities (vibration and light touch). Pearson's correlation test showed good statistically significant correlation between the number of neural cells per area in the same patient skin biopsy and both the Hallux Valgus angle and the neuropathy findings measured in the two modalities.

Abstract no.: 29869

ISOLATED MEDIAL CUNEIFORM FRACTURE; REPORT OF TWO CASES

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Although, fractures of the foot are common, cuneiform fractures are rarely seen. These fractures generally occur in conjunction with other fractures of the midfoot such as Lisfranc fractures. However, isolated cuneiform fractures are extremely rare with few cases reported in the relevant literature. Herein, we report two cases of isolated medial cuneiform fractures. One of the patients was treated with headless screws due to displacement in fracture configuration, and the other was treated conservatively. Fractures were united without any complication in both patients. In this report, we discussed the mechanism of injury and treatment options of isolated medial cuneiform fractures.

Abstract no.: 29873

USE OF VOLAR LOCKING PLATE FOR CORRECTIVE OSTEOTOMY OF DISTAL RADIUS MALUNION

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INTRODUCTION: Dorsally angulated malunions of distal radius fractures have been conventionally treated with an osteotomy through a dorsal approach. More recently the development of volar locking plates has made a volar approach popular with several advantages. We describe our experience with the use of volar locking plates and synthetic bone graft substitute in dorsally angulated malunions. **PATIENT AND METHODS:** We treated six patients with a dorsal malunion of the distal radius with clinical disability and pain after appropriate evaluation. Mean age of the patient group was 51 years (range 33-67). There were four females and two male patients in our series. Mean preoperative loss of volar tilt was 21 degrees and loss of radial height was 10 mm. A volar approach for distal radius was used for the corrective osteotomy and a fixed angle volar locking plate was used for stabilisation of the osteotomy. Calcium phosphate synthetic bone graft substitute (Actifuse) was used to fill the opening wedge defect in all the procedures. **RESULTS:** All patients had satisfactory clinical and radiological evidence of healing at the distal radius osteotomy at a mean of 8 weeks. Satisfactory improvement of the radiological deformity at the distal radius was seen in all cases. Correction achieved intra-operatively was maintained on follow up radiographs. One patient has problems with ulnar abutment postoperatively. No other post operative complications occurred. **CONCLUSION:** Volar plating for corrective osteotomy of distal radius malunions is a safe and predictable procedure.

Abstract no.: 29874

**DELAYED DIAGNOSIS OF RUPTURE OF BRACHIAL ARTERY DUE TO
CLOSED POSTERIOR ELBOW DISLOCATION**

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Posterior elbow dislocations complicated with brachial artery rupture are rare, especially in the absence of an accompanying fracture. Severe acute ischemia is not clearly evident in some cases and the diagnosis of arterial damage may not be realized, because the collateral circulation around the elbow can mask findings of acute arterial disruption. We report a patient with brachial artery rupture due to closed posterior elbow dislocation. The diagnosis of arterial injury was delayed because the hand was well perfused and radial pulse was present at initial presentation. Our case emphasizes the need for repeated vascular examinations in elbow dislocations, moreover, hospitalization and observation for at least 24 hours for further possible changes in the vascular status.

Abstract no.: 29875

TREATMENT OF TIBIAL FRACTURES WITH UNREAMED NAILS

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Intramedullary osteosynthesis is the treatment of choice for displaced diaphyseal tibial fractures. The technique yields high rate of union and low rate of complications. Debate continues over advantages of reamed or unreamed intramedullary nailing for treatment of diaphyseal tibial fractures. Aim: To present clinical result after treatment of diaphyseal tibial fractures with unreamed intramedullary nailing. Material and methods: From June 1998 to April 2010 we operated on 86 patients (22 women, 64 men) with tibial fractures using unreamed nails. In 13 cases the fracture was open (Gustillo I or II). In the early postoperative period, one patient died of pulmonary thromboembolism and another patient developed nonfatal myocardial infarction. Seven of the patients in the series did not attend last follow-up, another 9 patients were lost to follow-up, and two patients died of comorbidities unrelated to surgery. The remaining 77 of the patients with mean age 45.4 years were followed-up clinically and radiographically at mean 1.5 years after surgery. Results: The average period to bone union was 19 weeks. One nonunion and 10 delayed union were observed. Twelve patients (15,6%) complained of knee pain. In one case the nail broke four months after surgery and was exchanged with subsequent bone union. Another patient was re-operated for correction of malrotation. One patient had soft tissue infection around the distal locking screws, which necessitated screw extraction. Conclusion: Treatment of diaphyseal tibial fractures with unreamed intramedullary nailing showed high rate of bone union, favorable clinical outcome, and low frequency of complications.

Abstract no.: 29877

**ASSESSMENT OF JOINT GAP FOR 45° AND 120° KNEE FLEXION
DURING NAVIGATION-ASSISTED TKA**

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Background: The aim of gap balancing during total knee arthroplasty (TKA) is to achieve rectangular flexion and extension gaps. However, assessment of joint gap in midflexion (45) and deep flexion (120) is obscure. **Methods:** Fifty knees treated by TKA using a navigation-assisted gap balancing technique was evaluated. Mediolateral gap in 0°, 45°, 90°, 120° knee flexion was measured after proximal tibia bone cutting. Any gap difference of more than 3mm was considered significant. Patients were divided into 4 groups. Group 1: no gap difference, Group 2: Lax in midflexion, Group 3: Lax in hyperflexion and Group 4: Lax in both midflexion and hyperflexion. Clinical outcomes were assessed at 3, 6, 12 and 24 months postoperatively using the Knee Society Score (KSS) and Western Ontario MacMaster (WOMAC) score. Statistical significance was considered in $p<0.05$. **Results:** All cases were managed to have rectangular gap at 0° and 90°. The mechanical axis were within 3° in all cases. Number of patients in each group was as follows: Group 1; n=32 (64%) Group 2; n=10 (20%), Group 3; n=4 (8%) and Group 4; n=4 (8%). All of the joint gaps with significant difference ($>3\text{mm}$) were in trapezoidal shape with a wider lateral side. However, no clinical differences were observe between groups ($p>0.05$). **Conclusion:** This study shows significant proportion (20%) of cases with lax midflexion (45°) even in rectangular extension (0°)-flexion (90°) gap. Longer follow up study may be required for clinical significance.

Abstract no.: 29883

ISOLATED DORSAL CARPOMETACARPAL DISLOCATION OF THE INDEX AND LONG FINGER: AN UNUSUAL INJURY

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Dislocations of the carpometacarpal joints (CMC) are rare injuries. Index and long finger CMC joints dislocations are even more uncommon. The diagnosis can be easily missed by subtle radiographic findings at initial presentation. Early recognition and anatomical reduction are essential to achieve good long-term outcomes. We report a case with isolated 2nd and 3rd dorsal CMC dislocation. Patient received immediate closed reduction, and percutaneous pin fixation to maintain the reduction. At the final follow-up two years after the initial injury, patient gained full hand functions. We discussed the anatomy, mechanism of injury and treatment options for his rare injury.

Abstract no.: 29888

PHANTOM BONE DISEASE – A CASE REPORT

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Phantom bone disease or Gorham's Vanishing Bone Disease or massive osteolysis is an extremely rare condition of bone with less than 200 cases in the literature since the condition was originally reported. It does not occur often enough to be recognized readily. It often takes a long time for the condition to be recognized and there is no agreement about the most suitable treatment. An eight year old female patient presented to us with swelling of left arm. The swelling was 8 month duration, insidious onset, gradually progressing swelling over left arm extending from tip of shoulder to just above the elbow crease. Apart from swelling and mild pain she was healthy. There were no constitutional symptoms. She had pain free shoulder and elbow movements with no distal neurovascular deficit. Roentgenograms shows multicystic expansile lytic areas involving whole shaft of the humerus extending up to the distal end involving juxta articular region. All biochemical investigations were within normal limits. Histopathological picture revealed possibility of massive osteolysis and Cystic angiomas. Determination of the best method of treatment is difficult. Surgical treatment is amputation or local resection, with or without replacement prostheses or bone grafts. The results have been variable. Results obtained with radiation therapy have been equivocal. In the present case operation was performed because of increasing local symptoms, and for fear that the disease would spread to other bones. The patient now appears to be cured.

Abstract no.: 29889

MANAGEMENT OF PROXIMAL TIBIAL FRACTURES WITH BIOLOGICAL PLATTING

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Introduction: Tibial plateau fractures are often high energy injuries which may present as a challenge to the orthopaedic surgeon. They are often associated with significant soft tissue damage, compartment syndrome, articular surface disruption, & neurovascular injury. Traditional t/t with ORIF results in extensive dissection & periosteal stripping, high rates of wound breakdown & infection. The aim of treatment should be to minimize disturbance of soft tissue envelope thus reducing the rate of complications. **Methods:** 64 cases of proximal tibial fractures were treated with percutaneously passed platting technique. Lateral surface has better soft tissue coverage, hence is preferred for 'minimally invasive' platting. If required, a medial plate was used to act as a buttress or antiglide plate. If both were being done, medial side was approached first. The articular congruence and axial alignment were checked by image intensifier. Early mobilisation and range of movement exercises are the key to successful treatment. ROM can begin on the 2nd post op day. **Results:** There were no non-unions & all fractures eventually united. Complications encountered were superficial infection & delayed union. Non-weight bearing at 6 weeks, partial at 9-10 weeks, and full weight bearing at 14-16 weeks (only after radiological evidence). Results were evaluated with modified Rasmussen scoring system. Most patients had excellent to good results. **Conclusion:** The aim of surgery is to restore anatomy, regain axial length, establish adequate stability, preserve blood supply, and mobilize early. Indirect reduction techniques and other soft tissue preservation methods safeguard periosteal vascularity and promote early fracture healing.

Abstract no.: 29891

INDICATIONS AND RESULTS OF HIP RESURFACING: A FOLLOW-UP OF SEVEN YEARS

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As an alternative in total hip replacement the so called resurfacing arthroplasty of the hip is gaining wider acceptance. Hip resurfacing arthroplasty is claimed to allow higher activity levels and to give better quality of life than total hip arthroplasty. The best indication for this prosthesis is a young active patient with severe hip arthritis, good hip morphology and reasonable bone quality. Between September 2005 and December 2010, 95 hip resurfacing devices were implanted by a two surgeons in ninety one patients. The mean age of the patients was 52 years, and fifty patients were male. Primary osteoarthritis was the etiology for sixty-four hips. All patients were assessed clinically and radiographically. To date 4 hips have been revised (4.2%). The cause for revision was a fracture of the neck of the femur/ avascular necrosis (1hip), followed by loosening of the acetabular component (1hip), infection (1 hip). In one case the cause of failure was unknown. These five-year results in the study's group are satisfactory. Resurfacing hip arthroplasty with the presented implant provides a durable standard for all young patients requiring hip joint replacement. Larger diameter heads have contributed to lower dislocation rates and large-diameter metal-on-metal articulation can provide close anatomic restoration in primary THA. On the basis of the current evidence base, RA surgery may have better functional outcomes than total hip arthroplasty, but the increased risks of avascular necrosis, neck fracture and revision surgery following hip resurfacing indicate that THA is superior in terms of implant survival.

Abstract no.: 29892

LCA RECONSTRUCTION WITH SEMITENDINOSUS/GRACILIS AUTOGRAFT IN TIBIO-FEMORAL RIGID-FIX TECHNOLOGY – CLINICAL RESULTS

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Within the scope of cruciate ligament fixation various fixation methods are used. A retrospective consecutive study of 65 patients operated for anterior cruciate ligament rupture in tibial and femoral rigid-fix technique was performed. 3 weeks postoperatively full weight bearing was allowed. A knee-orthesis with 90° of flexion and 0° extension limitation was recommended for 6 weeks. The median follow-up time was 36 months. Functional outcome was analyzed using clinical examination, rollimeter testing, a patient questionnaire, Tegner-, Lysholm-, IKDC- und OAK-Score. 57 patients showed sufficient stability. Traumatic rerupture was detected in 8 cases. In conclusion, tibial and femoral rigid-fix technique showed good functional results in regard of stability.

Abstract no.: 29893

**CORRELATION BETWEEN THE LENGTH OF C6 SPINOUS PROCESS
AND NECK SYMPTOMS IN THE GENERAL POPULATION**

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Introduction: It was reported that preservation of attachment of nuchal ligament in the C7 spinous process was effective for reducing neck symptoms after cervical laminoplasty. However, we have often experienced that the nuchal ligament is also rigidly attached to the C6 spinous process in some cases. The purpose of this study was to investigate the correlation between the length of C6 spinous process and frequency of nuchal ligament attachment to the C6 spinous process, and corresponding neck symptoms in the general population. **Methods:** Lateral cervical roentgenographs of 758 healthy volunteers who participated in a health promotion project were analyzed, including 493 women and 265 men with ages ranging from 21 to 86 years. The lengths of C6 and C7 spinous processes were measured by lateral roentgenograph, and C6/C7 process lengths ratios were calculated. Neck symptoms were assessed by the presence or absence of neck or shoulder stiffness using the visual analogue scale (VAS). **Results:** The average C6/C7 spinous process length ratio was 0.76 (range 0.40~0.99) with males averaging 0.75 and females 0.77 with no significant difference between genders. The average VAS was 27.5mm (male average 24.3mm, female average 29.4mm). There was no correlation between C6/C7 ratio and VAS in males but, in females with C6/C7 ratios greater than 0.9 had significantly lower VAS ($P=0.005$). **Conclusion:** These data suggest that females with greater C6/C7 ratios experience less severe neck symptoms.

Abstract no.: 29894

EVALUATION OF THE MANAGEMENT OF PROXIMAL HUMERAL FRACTURES BY VARIOUS MODALITIES

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BACKGROUND: Proximal humeral fractures are one of the commonest fracture encountered in emergency centres and management of complex fractures are still challenging. We have evaluated the efficacy of various methods used for the fixation of fracture proximal end humerus. **METHOD AND MATERIALS:** Forty seven cases with proximal end humeral fractures were taken in our study and classified as per Neer's classification. Out of forty seven, fourteen have been classified into 2 part fracture, seventeen into 3 part fracture, thirteen into 4part fracture and three with fracture dislocation and all these patients are treated surgically depending upon fracture geometry and quality of bone with various modalities viz. Proximal humeral Nailing (specialized nails), CR & percutaneous pins / screws, JESS, Proximal Locking plate and Hemireplacement Arthroplasty. These patients were evaluated for their functional outcomes by Swanson Shoulder score. Mean duration of follow-up was 19 months. **RESULTS:** On evaluating the final outcomes by Swanson shoulder score, all patients shown good to excellent result except four patient presents with malunion, two patients with non union and one with AVN. There was no incidence of deep infection and nerve injury. Patients presenting with non union and AVN were treated later by HRA and improved well. **CONCLUSION:** Proximal humeral fractures can be treated successfully by various modalities depending upon fracture pattern, quality of bone and individual surgeons' experience and expertise.

Abstract no.: 29895

PRIMARY STERNAL TUBERCULOSIS – A RARE CASE REPORT

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Primary tuberculous osteomyelitis of the sternum is a rare clinical entity. Sternal tuberculosis can result from direct extension of the disease from hilar lymph nodes, hematogenous or lymphatic dissemination from other sites, and following BCG vaccination in children. A young patient of 12 years age presented to us with pain and swelling over the manubrium sternii. Routine roentgenogram shows no finding. Computed tomography demonstrated a hypodense lytic lesion in the body of the sternum. Curettage of the lesion done and tissue sent for histopathological examination. Histopathologically it was confirmed as a case of tuberculosis. Extensive diagnostic work-up did not reveal any other focus of tuberculosis in this case. After surgery patient was given anti tuberculous treatment for 9 months till date the patient is asymptomatic.

Abstract no.: 29897

PERCUTANEOUS FIXATION OF TYPE I PIPKINS FEMORAL HEAD FRACTURES: A NEW MODALITY OF TREATMENT

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Femoral head fractures are very rare injuries, almost always caused by hip dislocations. The femoral head is fed by three arteries, the main one of which is the medial femoral circumflex. If this is disrupted, there is a high risk of AVN. The key criterion in the Pipkin classification is whether the femoral head is fracture above or below the fovea. A type 1 fracture is with the fracture below the fovea, and a type 2 above. A type 3 is a femoral head fracture (regardless of location) associated with a femoral neck fracture, and a type 4 is a femoral head fracture associated with an acetabular fracture. Owing to the paucity of series reported in the literature, treatment recommendations appear to be based on common sense and experience rather than evidence. We are presenting a series of 5 cases of posterior dislocation of hip associated with femora head fractures (Pipkins type I) after reduction of the hip dislocation in emergency the patient was planned for fixation. All patients were operated in lateral position under C arm image intensifier reduction of the fragment was checked fixed with a percutaneous K wire , definitive fixation done by 6.5 mm cannulated cancellous screw. Post operatively 3 weeks immobilization followed by non wt bearing physiotherapy started, wt bearing allowed after 12 weeks. Till date none of the patients have any finding of avascular necrosis. Percutaneous fixation of femoral head fracture (Pipkins Type I) is least traumatic minimal invasive technique with excellent results.

Abstract no.: 29898

MOSAICPLASTY FOR THE TREATMENT OF OSTEochondritis DISSECANS OF THE HUMERAL CAPITELLUM: A REPORT OF TWO CASES FOLLOWED MORE THAN 10 YEARS

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We started multiple osteochondral plugs autograft from the patient's knee "mosaicplasty" for the treatment of the severe osteochondritis dissecans (OCD) of the baseball elbow since 1997. We had a chance to see two patients followed more than ten years. Case 1) He showed severe elbow OCD with some degenerative change when he was 17 years old and received mosaicplasty. It was the first case of the mosaicplasty for the elbow OCD and the result was not good because of our technical problems but he returned to former activity (baseball infielder). Elbow performance score by JOA (Japanese Orthopaedic Association, Full mark=100pts) was 81pts before surgery and 78pts 1.5 years postoperatively. He visited us postoperative 12 years because of gout arthritis of the knee and his elbow showed some improvement to 86pts. No radiological progression of degeneration was seen. Case 2) He showed painful locking due to elbow OCD and received mosaicplasty when he was 15 years old. He quickly returned to the former activity (baseball infielder) after the procedure without any symptom (JOA score 100pts at postoperative 2 years). He still showed very good elbow with full function (JOA 100pts) and no osteoarthritic change on X-ray when he visited us 10 years postoperatively. He felt motion crepitus on his donor site with neither pain nor radiographic deterioration. Mosaicplasty was still effective for the treatment of damaged elbow for ten years; of course, further careful follow-up was necessary for both the elbow and the knee.

Abstract no.: 29903

INTRAMEDULLARY NAILING IN TIBIA FRACTURES ONE YEAR FOLLOW-UP IN 150 CASES

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AIM: IM nailing is standard option for tibia shaft fractures. The aim of study was to evaluate our experience of IM-nailing in tibia fractures. **MAT:** Results of 148 patients (150 fractures) treated with IM- nailing from 2006 to 2009 were investigated. Mean age 42.8 years (17-76). Closed fractures - 132, open - 18. Interval from the injury to operation: 5.7 days (0-45). Closed reposition achieved in all but 9 cases. Periarticular fractures (involved proximal or distal one fifth of tibia) were seen in 34 cases. **RES:** Satisfactory reposition and fixation was achieved in most cases, axial deviations more than 5° were noticed post-operatively in 6 cases, or developed within 2 months in other 2, but were well tolerated clinically. All deviations were seen in joint-adjacent fractures (proximal 5, distal 3). Infection occurred in 2 cases (1.3%). Follow-up results were obtained in mean terms 13.6 ± 6.6 months (12-42). No non-unions were seen. Delayed unions - 8 patients (6 - with proximal tibia fractures). Mean terms of radiological consolidation was 5.7 (3-8) months. Mean time to full weight bearing comprised 4.0 ± 2.1 months: in the subgroup with upper third involvement -6.1 ± 1.3 ($p < 0.05$). **CONCL:** IN nailing proved to be easy and reliable in most cases of tibia shaft fractures. Periarticular fractures remain technically more difficult for IM-nailing, are accompanied by longer consolidation time (in upper third) and higher rate of malreductions.

Abstract no.: 29904

RESULTS OF PROXIMAL FEMORAL DEFORMITY CORRECTION IN MATURE PERTHES DISEASE

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Legg-Calve-Perthes (LCP) disease can result in femoroacetabular impingement (FAI), which can lead to pain and cartilage damage. Recent advances in surgical technique have permitted safe surgical dislocation of the hip, allowing for safe intraarticular surgery. We propose to demonstrate the efficacy of this technique for the treatment of adolescents with LCP and resultant deformity. Methods: Retrospectively, a group of 29 adolescents [19 males and 10 females, age 17 (range 9-35)] with a diagnosis of LCP, who underwent treatment between January 2001 and December 2009 were identified for this study. All subjects had pre and postoperative WOMAC scores and at least one year of clinical and radiographic follow up. Through the surgical dislocation approach, all patients underwent femoral head-neck osteoplasty, 21 underwent relative femoral neck lengthening and trochanteric transfer, 6 underwent additional intertrochanteric osteotomy and 7 had labral debridement. The average follow-up was 3 years from the time of surgical intervention. Results: Postoperative WOMAC scores significantly improved globally for pain, stiffness and function. There were no statistically significant differences in WOMAC scores between males and females. Eight patients required additional surgical procedures after surgical dislocation (1 periacetabular osteotomy, 1 flexion intertrochanteric osteotomy, 1 arthrotomy, 5 arthroscopies with labral/cartilage debridement. One patient required a repeat surgical dislocation and femoral head-neck osteoplasty for recurrence of femoracetabular impingement. 3 patients underwent total hip arthroplasties during the follow-up period and were considered failures. Summary: Symptomatic hips in healed LCP can be surgically treated with improved clinical outcomes and low complication rates.

Abstract no.: 29905

**ASSOCIATION OF FEMALE SEX RELATED FACTORS IN SRI LANKAN
FRACTURE NECK OF FEMUR PATIENTS**

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Background: Studies have shown that Asian women have lower BMD (Bone Mineral density) when compared with Caucasian women. This study assessed the effect of different variables of BMD related to the Sri Lankan females. **Objective:** To assess the prevalence and the relative importance of female sex related risk factors in Sri Lankan femoral neck fracture patients. **Methodology:** Descriptive cross sectional analysis with a questionnaire and survey among female patients with fracture neck of femur for a period of 01 year. Bone mineral density was measured by using dual energy X-ray absorptiometry. **Results:** There were 82.9% females in the study group. Fractured patients had experienced late menarche (Mean 14.16(SD 0.998, N= 85) yrs and late menopause (mean 50.11 (SD3.42) yrs). BMI is compared with regional and western studies. 76.2% had breast fed. Number of children 4.05(SD 2.782(N=87). 22% had hormone replacement therapy. 7.6% had undergone oophorectomy. Usage of oral contraceptives, drugs and mechanism of falls were assessed. Majority of them were hypocalcaemic and anemic with a lower BMD. These figures were compared with the South India, Caucasian, Filipina and Hispanic groups. **Conclusion:** Female sex related factors are more or less equal all over the world. However the effects of these factors are causing higher morbidity in Sri Lanka compare to the western world. Even though the Sri Lanka is premier in maternal health in South East Asia we need further improvements on female nutrition for better bone health.

Abstract no.: 29912

RARE CASE OF FLOATING ELBOW VARIANT IN AN ADULT

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Introduction: Floating elbow is a rare entity children; 2 to 10 % rarer in adults. Mode of injury is a sideswipe injury, crush injury or a fall from height .Incidence of neurovascular complications in floating elbow is 25 to 45% and compartment syndrome is seen in one third of the cases. A floating elbow with a monteggia fracture in a case where there is no neurovascular deficit or any open injury is rarer. Both coexisting in a case where there is no neurovascular deficit nor any open injury is rarer. We describe one such case treated with no other system involvement. **Materials and Methods:** A young male presented to us with a sideswipe injury resulting in Swelling and deformity of the dominant upper limb.Xray showed Communitied vertical intercondylar fracture with Fracture dislocation of elbow and Monteggia variant (fracture of the radial diaphysis). Open reduction of all fractures were carried out. **Results:** Patient at one year follow up had a range of motion of 10-100 degree elbow flexion, restriction of terminal 10 degree of both supination and pronation. **Conclusion:** Such kind of fracture pattern is rare and the goal would be to restore the articular congruity in condylar involvement and apt reduction and fixation of humeral and forearm fractures with reconstruction of superior radioulnar joint if necessary.

Abstract no.: 29919

TREATMENT OF TIBIA AND FEMUR NON-UNIONS WITH IM-NAILING

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Mat. 40 patients with tibia (20) and femur (20) non-unions were treated in our hospital in 2006-2009. Open fractures as initial injury was seen in 4 femur and 7 tibia cases. 33 patients were operated on previously with Ilizarov device (2 femur, 9 tibia), plate (13 and 6), IM-nailing (3 femur cases). Interval from the injury to definitive surgery comprised $12,6 \pm 4,3$ months (8-26). 17 patients were operated more than once previously. Methods: First stage was removal of failed fixation. Attempt of closed reposition succeed in 3 femur and 6 tibia cases, followed by standard nailing procedure with reaming. Open reposition and reaming from inside was performed in 17 femur and 14 tibia cases, usually combined with decortication. Bone grafting with reaming debris was performed in all open cases, additionally iliac (14) or proximal tibia grafts (6) were used. Results: 2 cases of superficial infection and 1 local skin necrosis were seen in tibia cases. Mean time to union in femur comprised $6,8 \pm 2,1$ months (5-9), in tibia $5,7 \pm 2,4$ (4-12). Time to full weight-bearing: $4,5 \pm 2,3$ months in femur and $3,4 \pm 1,6$ months in tibia. Function of extremity depended largely from results of previous treatment. After Ilizarov device application knee ROM was main problem in patients with femur fractures. Conclusion: IM-nailing is valuable option in shaft non-unions of femur and tibia. The advantages include more safety to soft-tissues and earlier weight-bearing compared to other treatment modalities.

Abstract no.: 29924

SURGICAL TREATMENT FOR PERIPROSTHETIC INFECTION OF MAJOR JOINTS

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Aim: To improve the results of Surgical treatment for periprosthetic infection of major joints.
Materials and methods: Data of 86 patients from 1995-2010 with periprosthetic infection are analysed. The affected major joints are the following: Hip joint (66), knee joint (19) and elbow joint (1). Surgical method is decided according to the following criteria: Condition of endoprosthetic components, Duration after endoprosthesis, Longevity of infection. The following surgeries are performed at hip joints: In 38 patients – Resection arthroplasty, in 2 patients – surgical curettage without removal of endoprosthesis, in 16 patients – two stage endoprosthetic replacement using spacers impregnated with antibiotics and in 3 patients – one setting revisional endoprosthetic replacement. In knee joint after periprosthetic infection, we performed the following type of surgeries: In 12 patients – removal of endoprosthesis followed by stabilization with external fixators or internal fixators, in 3 patients – surgical curettage without removal of the endoprosthesis, in 4 patients – two stage endoprosthetic knee replacement using spacers impregnated with antibiotics. Removal of endoprostheis in 1 patient was done after periprosthetic infection of elbow joint. Surgical curettage was performed by ultrasound apparatus “Sonoca-185” followed by the installation of aspiration-rinsing system. Fractional rinsing drainage was carried out during 10-12 days. Results: The outcome of resection arthroplasty was characterized by remission of purulent infection and partial or full weight bearing of limbs with the formation of neoarthrosis. During follow-up, we did not observe residue of infection up to 5 years after two stage hip arthroplasty in 16 cases.

Abstract no.: 29927

FUNCTIONAL OUTCOME OF BRISTOW PROCEDURE IN CHRONIC RECURRENT ANTERIOR INSTABILITY

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Aim: To study the functional outcome of Bristow procedure for Chronic recurrent anterior glenohumeral instability. Methods: 21 patients in the age group of 21-53 years with post traumatic anterior instability were operated by Bristow procedure with mean followup of 30 months. Results: Functional assessment was done by ROWE scoring. 92% had excellent and 8% had fair results. There was a slight decrease in mean external rotation in the operated joints compared to the opposite side. This diminution did not affect the activities of daily living. Time to average return to activity was 6 months. There was no recurrence or instances of hardware failure. Conclusion: Although Bristow's procedure is nonanatomic it offers excellent dynamic stability and functional outcome.

Abstract no.: 29928

CORONAL FRACTURES OF THE MEDIAL FEMORAL CONDYLE: A SERIES OF 7 CASES AND REVIEW OF LITERATURE

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INTRODUCTION: Isolated coronal fracture of medial femoral condyle, with intact lateral femoral condyle is very rare. We are presenting our experience with such 7 cases of coronal fractures of medial femoral condyle. **MATERIAL AND METHODS:** We reviewed all case records of cases of coronal fractures of femoral condyle which presented to our centre from Jan 2000 to Jun 2009 retrospectively. Of 72 cases, 56 were of lateral condyle, 9 were bicondylar and 7 were isolated medial femoral condyle fractures. We retrospective evaluated them clinically and radiologically. **RESULTS:** 4 cases were isolated medial femoral condyle fractures, 3 had associated fractures. 5 cases were identified at the initial presentation, 1 was missed in initial evaluation and hence was re operated for fixation, and 1 case presented to us as neglected medial Hoffa fracture after 6 months of injury. Mechanism of injury was direct impact to the medial side of knee in flexion in 4 out of 7 cases. All cases were operated through medial or antero medial approach, and all were fixed with antero posterior screws. All cases united at a mean period of 4.5 months. **CONCLUSION:** Coronal fractures of the medial femoral condyle are very rare. Strong suspicion is needed to diagnose them early especially if undisplaced. Being intra articular fractures ORIF as soon as possible is the treatment of choice. Medial or anteromedial approach with antero posterior screws is the preferred method for fixation.

Abstract no.: 29934

**CARRYING ANGLE DIFFERS SIGNIFICANTLY IN CHILDREN WITH
DIFFERENT TYPES OF CONDYLAR FRACTURES OF THE DISTAL
HUMERUS**

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During last 26 years 2240 children with condylar fractures of the humerus were seen by the author and his teams of Resident doctors. Mode of fall, age, type of fracture and carrying angle of the contralateral normal side were carefully noted. In 1408 children who sustained supracondylar fractures of the humerus, the average carrying angle was 8 degree (valgus) and average age was 7.5 years. In 703 children with lateral condyle fractures of the humerus the carrying angle was -2 degree (varus) and average age was 4.4 years. In 83 children with medial condyle fractures the average carrying angle was 8.4 degree and average age was 9.2 years. We had 22 cases of T-Y fractures of the distal humeral epiphysis (Ogdon,s type IV -B injuries).Average age of these children was 8years and carrying angle in the opposite side was 0.8 degree.The 20 children with medial epicondyle fractures had average carrying angle of 12.1 degree and average age was 10.7 years. We had only 4 cases of lateral epicondyle fractures. Average carrying angle in these children was 4.0 degree and average age 13.4 years. We also did survey of nursery and school children and measured their carrying angle which varies with age. Children are born with valgus carrying angle which fluctuate too much (even becomes varus transiently) during growth spurts and leads to various types of condylar fractures when they fall on outstretched hand.

Abstract no.: 29937

RETROSPECTIVE COMPARISON BETWEEN TWO SERIES OF CONSERVATIVE TREATMENT FOR CONGENITAL CLUBFOOT

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Knowledge about the three-dimensional motion of tarsal bones in congenital clubfoot (CCF) has lead to improved outcomes in both surgical and conservative treatments. We compared the correction results between two series of CCF using stressed XP. One method was the three-dimensional correction method (3DM), in which the physician manipulated the calcaneus externally, as well as in the valgus and dorsiflexed position. Achilles tenotomy was not performed in 3DM. The other method was the Ponseti method (PM) including Achilles tenotomy. Materials and method: From 1993 to 2003, 3DM was performed on 33 feet in 22 patients who visited our clinic before they were 3 months old. PM was performed on 29 feet in 19 patients in the same age from 2004 to 2008. The anterior talocalcaneal angle, lateral talocalcaneal angle, and tibial-calcaneal angle were measured every three months for 12 months. Results: There was a statistically significant difference between the two series for all evaluated angles. Due to residual deformity, circumferential subtalar release was performed on 17 feet in 10 patients in the 3DM series until they reached 2 years of age. The aforementioned procedure was not used in the PM series. Discussion: Although little is known about the etiology of CCF, small calf muscles are always observed. We believe that a small excursion of the triceps surae and intrinsic foot muscles contributes to tarsal malalignment. Achilles tenotomy and the correction of the pronation deformity during the first casting of the PM may provide better correction than the 3DM.

Abstract no.: 29939

MODERN APPROACHES IN KNEE JOINT ARTHROPLASTY

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Aim: to decide rational approaches for knee replacement depending on the stage of gonarthrosis, it's etiology, character and the degree of impending pathology. Materials and methods: Data of 290 patients from 2001-2010 who underwent knee replacement (311 surgeries) for gonarthrosis and instability of knee for several etiology. In 21 patients, knee replacement is performed on both sides. The following types of knee replacement are performed depending on character and degree of pathological changes at the joint. I. Total knee replacement with non constrained or posterior stabilized knee endoprosthesis (AGG, AGG V2 PS «Biomet»-132; Beznoska – 42, NextGen Zimmer – 22, Hermes, Ceragyr «Ceraver» – 27. II. Hinged knee endoprosthesis (AGC Dual Articular «Biomet» – 23; RT-Plus «Smith & Nephew» -17). III. Unicompartmental knee endoprosthesis (Oxford «Biomet» - 30). Revisional total or partial knee replacement is carried out for aseptic complications in 5 patients. Removal of endoprosthesis and arthrodesis of knee joint is performed for deep endoprosthetic infection with instability in 6 patients and 2 patients underwent revisional two stage endoprosthetic replacement with custom made spacers impregnated with antibiotics. An articulating cement spacer is implemented successfully for infected gonarthrosis in 1 patient as a first step in 2 stage knee replacement. Summary: Modern orthopedics allows us to use three basic types and considerable range of knee endoprostheses with several constructions. The correct selection of surgical method and implants gives more than 90% positive long term results.

Abstract no.: 29942

**THE SAFETY OF CERVICAL PEDICLE SCREW FIXATION IN CHILDREN -
A RADIOLOGICAL AND MORPHOMETRIC STUDY**

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Introduction: Cervical Pedicle Screw (CPS) fixation in children has not been described previously. We evaluated normal paediatric pedicle morphometrics to assess the possibility of screw insertion in 376 pediatric cervical pedicles. **Methods:** 376 paediatric cervical pedicles in thirty children (age: 6.7 ± 3.9) were analysed for pedicle width (PW), pedicle height (PH), pedicle length (PL), pedicle axis length (PAL) and transverse pedicle angle (TPA). Their mean values and changes with growth were analysed. **Results:** The mean PW increased from C3 to the C7 vertebra. With growth, the pedicle width gradually increased at all levels. This increase was significant only upto the age of 10. More than 75% of adult pedicle dimensions were achieved before 5 years. The mean PL at all levels remained the same with no significant increase with growth. The PAL however showed continuous increase with growth. The PAL also showed a gradual increase from C3 to C7. The PH was more than the pedicle width at all levels. The mean TPA showed a convex trend with higher values between C3 and C6. **Conclusion:** With growth, there was a gradual increase in PW, PH and PAL but was mainly before the age of 10. The increase in PAL was mainly contributed by the growth of the body. Majority of C3 pedicles (60%) were thin making screw fixation unsafe. At other levels, the pedicle morphometrics do not restrict safe application of screws.

Abstract no.: 29943

**EFFECTIVENESS OF ULTRASOUND SCREENING FOR
DEVELOPMENTAL DISPLASIA OF HIP (DDH) IN ONE STOP DDH CLINIC**

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Aim: The aim of this study is to assess the effectiveness of selective ultrasound screening by Orthopaedic surgeon for early diagnosis and treatment of developmental dysplasia of hip (DDH) in one stop clinic. Methods: This prospective study included 395 infants (185 male and 210 female) who were referred for DDH screening. Average age was 12.5 weeks (1 day to 15 months). All infants were assessed for risk factors of DDH. Clinical examinations were performed by the senior author followed by ultrasonography of both of the infant's hips by the same author using the Graf technique. Alpha and beta angles were calculated and hips were classified according to Graf's classification system. Results: Out of 790 hips examined 670 (84.8%) were labelled as normal. 120 (15.1%) hips in 84 patients were diagnosed as dysplastic or dislocated. Clinical examination only detected 39 patients out of 84, sensitivity of 46%. Average age of diagnosis was 12 weeks (3days – 11 months). There were 14 cases of late diagnosis (> 4 months). 79 patients were successfully treated with pavlic harness, 2 required traction and 3 were referred for surgical treatment. Conclusion: Selective ultrasound screening is effective in early diagnosis of DDH and significantly reduces the duration of conservative treatment as well as the need for surgical intervention but does not complete eliminate late diagnosis of DDH. We find the concept of one stop DDH clinic highly effective and recommend that ultrasound training should be a part of orthopaedic curriculum.

Abstract no.: 29944

**COMPARISON OF COSTS AND OUTCOME BETWEEN AMPUTATION
AND LIMB SALVAGE IN SEVERELY INJURED LIMBS**

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AIM: The long term functional outcome and health care cost were studied in patients who had early below knee amputation or reconstruction following a severely injured extremity.

Methods: Twenty nine severe limb threatening injuries of Gustilo grade IIIB or IIIC and Ganga Hospital Open Injury Score of more than 13 were treated between 2006 and 2007. 21 limbs were salvaged and 8 limbs were primarily amputated. We analysed the index hospitalisation days, number of surgeries, rehospitalisation days, total cost, LEFS (Lower Extremity Functional Score), and return of work in both group. **Results:** The salvaged group (one female and 20 males) had a mean age of 39.7 (21-62). Total hospitalisation days were 78.1(13-164) and the average rehospitalisation was 2.2(1-7), number of surgeries were 6 (2-12). The mean cost was 10200\$ and the average LEFS was 42.76(17-64). Eight (30%) returned to work. In the amputated group, all were male with a mean age of 39.7 (23-62). The average hospitalisation days were 20.6(8-39) and the average rehospitalisation days were 0.5(0-2), the average number of surgeries were 2.3(1-4). The mean cost was 3400\$(1000-6600) and the average LEFS was 42(21-54). Four of them returned to work. **Conclusion:** Functional outcome was same in both groups at 2 years follow-up. However the total hospitalization days, number of surgeries and cost factors were high in the salvaged group compared with amputation group.

Abstract no.: 29951

**OUR CLINICAL EXPERIENCE WITH A SHORT STEM PROXIMA
(DEPUY/USA)**

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This is a prospective cohort study of patients undergoing total hip replacement using an uncemented proximal loading short stem Proxima (DePuy/USA). Patients with a minimum of 24 months of clinical and radiological follow-up were included in this study. There were males 10 and 17 females. Average age at surgery was 51 years. The diagnoses included developmental dysplasia of the hip in 2 patients, osteoarthritis in 15, avascular necrosis of the femoral head in 10. Average follow-up was 24 months (range 12-28). There was no evidence of subsidence of any stem at the final follow-up. Interface buttressing was observed in 20 patients on the AP view and in 14 on the lateral view. This was seen in Gruen zones 1, 5, 6 and 10. We did not have any cases of heterotopic ossification. Three was not any episode of dislocation or infection. Proximal fixation of the short stem allows for more physiological distribution of loading in comparison with intermediate and distal fixation stems. There were no cases of radiographic or clinical manifestation of aseptic stem instability in the studied group. In all groups with a maximum of 2 years follow up, we noted 95% good and excellent results.

Abstract no.: 29956

**MODIFIED ANTEROLATERAL MINIMALLY INVASIVE APPROACH FOR
TOTAL HIP REPLACEMENT - TECHNIQUE AND CLINICAL RESEARCH**

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Study Design: Minimally invasive surgery (MIS) was defined as less invasive to the skin, muscles, tendons, and bone could reduce complications and improve clinical results. A number of different approaches and methods for THR have been described in literature.

Objective: To investigate the feasibility and clinical outcome of MIS total hip replacement (MIS-THR) through a modified anterolateral approach. **Methods:** From February of 2003 to March of 2009, 118 cases with femoral neck fracture were performed with MIS-THR through a modified anterolateral approach. The length of incision, the time of operation, the intra- and post-operative blood loss, the time to leave bed and walk without crutches were recorded. Harris score system was used to assess all patients postoperatively in 1 week, 6 weeks, 3 months, 6 months and 12 months perspectively. **Results:** The length of skin incision ranged from 7 to 9cm (mean 8cm). The operation time was 45 to 60 minutes (mean 56 minutes). The blood loss was 150 to 400ml (mean 280ml). There is no severe complication occurred on this patients group. The period of follow up time ranged from 12 to 86 months. Harris score revealed that 111 cases have excellent clinical results (Harris score from 90 to 100) and 7 cases have satisfied results ((Harris score from 80 to 89)). **Conclusion:** The clinical investigation of this modified anterolateral approach for THR showed a excellent-satisfied results with relatively less blood loss, less muscle disruption, less postoperative pain, shorter hospital stay, quicker rehabilitation, smaller incision and cosmetic comfortable.

Abstract no.: 29957

TRUE LATERAL VIEW FOR SHORT FEMORAL NAIL

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An optimal insertion for femoral head fixating devices (HFD), e.g. hip screw(s) or blade, are an essential to successful short intramedullary nailing for trochanteric fractures. The aim of this paper is to present a novel, useful and reproducible technique for optimal insertion of HFD. True lateral view is defined a view where the femoral head center is on an extension line of femoral axis. This view will surely be gotten by rotation of a C-arm. Preoperatively, reduction status of the fracture and alignment of the proximal femur are evaluated this view. After insertion of the nail intraoperatively, C-arm is moved till the femoral head center meets an extension of the center axis of the nail. Then, rotate the nail so that the shadow of the arm of the target device completely agrees with the shadow of the nail. The guide wire for HFD must go towards the femoral head center. We have used this technique from 1999; central insertion of HFD on the lateral view was achieved in more than 95% cases. This technique is simple and reproducible and requires any special instruments. We strongly recommend this technique for all surgeons who treat hip fracture.

Abstract no.: 29960

TWO YEAR RSA EVALUATION OF THE WEAR OF VITAMIN E STABILIZED HIGHLY CROSS-LINKED POLYETHYLENE AND THE STABILITY OF REGENEREX™ ACETABULAR SHELLS

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Introduction: Vitamin E doped highly cross-linked polyethylene (E1TM) was introduced as a low-wear bearing with improved mechanical properties. The study aims to evaluate the early *in vivo* E1TM wear and implant stability of RegenerexTM cups using Radiostereometric Analysis (RSA). **Methods:** Forty-four patients were recruited into a 5 year RSA study. Tantalum beads placed into the pelvis, femur, and the E1TM liner at surgery allow for measurement of femoral head displacement and acetabular and femoral component stability. Bi-planer RSA radiographs are obtained immediately post-operatively, at 6 months, 1, 2, 3 and 5 years post-operatively. Thirty-four patients (38 hips) with 32mm heads coupled with E1TM liners were followed for 6 months, 29 patients (32 hips) for 1 year, 14 patients (15 hips) for 2 years, and 1 patient (1 hip) for 3 years. **Results:** At two years, 1) median superior femoral head penetration was 0.02 ± 0.02 mm; 2) the median acetabular cup migration in the proximal direction was 0.13 ± 0.05 mm; and 3) the median femoral stem migration in the distal direction was 0.15 ± 0.19 mm. **Conclusions:** This study provides the first *in vivo* wear measurement of E1TM polyethylene using the RSA method. This clinical and radiographic data documents the early stability of the Regenerex™ shell and the wear performance of vitamin E doped highly cross-linked polyethylene. Continued long term follow-up is important to document successful device performance.

Abstract no.: 29961

EFFECTS OF POSTOPERATIVE RADIOGRAPHIC LIMB ROTATION TO ERRORS IN POSTOPERATIVE RADIOGRAPHIC ASSESSMENT; A PRELIMINARY REPORT

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We evaluated the effects of postoperative radiographic limb rotation and the errors in postoperative radiographic assessment. The three dimensions fluoroscopic were performed in 15 postoperative total knee arthroplasty patients. The fluoroscopic results were set at true antero-posterior position then it was externally rotated (ER) and internally rotated (IR) on the fluoroscopic screen in 5 degrees increment from 5 degree to 30 degree to measure the tibial component-tibial shaft angle (TC-TS angle), femoral component-femoral shaft angle (FC-FS angle) and tibiofemoral angle (TF angle). We set the acceptable value of postoperative radiographic assessment error at 3 degrees. The TC-TS angles were in acceptable range until limbs were ER at 15 degrees and IR at 30 degrees. Both FC-FS angles and T-F angles were in acceptable range until limbs were ER at 15 degrees and IR at 5 degrees. The correlation coefficient between increasing of radiographic limb rotation and error of postoperative radiographic assessment were as followed, the TC-TS angle (ER $r = 0.87$, $p = 0.0063$; IR $r = 0.55$, $p = 0.0923$), FC-FS angle (ER $r = 0.89$, $p = 0.0043$; IR $r = 0.88$, $p = 0.0055$) and TF angle (ER $r = 0.94$, $p = 0.0012$; IR $r = 0.95$, $p = 0.0011$). The increasing of postoperative radiographic limb rotation has strong correlation with error of postoperative radiographic assessment. In case that the acceptable error of postoperative radiographic assessment is 3 degrees, the physician cannot accept postoperative radiograph with limb ER > 15 degrees and IR > 5 degrees.

Abstract no.: 29966

EXPLANATION OF DEVELOPMENT OF SPINE DEFORMITY; NEW CLASSIFICATION: RULES OF NEW TREATMENT AND CAUSAL PROPHYLACTICS

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For last 16 years the “biomechanical etiology of so-called idiopathic scoliosis” was confirmed in Poland and in other countries. Material: 1450 children 3–18 years old (from 1995 – 2010), divided in new classification (3 types-4 groups). Biomechanical etiology: Asymmetry of movements between right and left hip, “asymmetry during gait” & standing only on the right leg. Asymmetry of growth and development of scoliosis. New classification, 4 etiopathological groups(epg). S” double scoliosis (I epg, 3D). Model of hip movements: abduction right hip contracture and left hip large adduction. Biomechanics: gait and permanent standing on right leg. Early stiffness, curves and rib prominence. Some cases „lordoscoliosis”. Progression. „C” one curve scoliosis (II/A epg, 1D) Model of hip movements: right hip small adduction, left large adduction. Biomechanics: permanent standing on right leg. Firstly physiological deviation and later “C” scoliosis. Older patients “degenerative scoliosis”. Without progression. “S” double scoliosis (II/B epg, 2D). Model of hip movements like II/A epg. Additionally: laxity and/or incorrect exercises. Thoracic curve secondary. No stiffness, no large curves, no rib hump. Some cases „kiphoscoliosis”. Without progression. „I” scoliosis (III epg) – Model of hip movements: abduction right hip contracture, left hip small adduction. With large stiffness, without curves,. Biomechanics: gait, resulting rotation deformity. Without progression. “Back pains” in adults. Conclusions: 1/Etiology of so-called idiopathic scoliosis is strictly biomechanical (1995-2007/2010). 2/Three groups, 4 subtypes (“S”-Iepg, “C”-II/Aepg & “S”-II/Bepg, “I”-IIIepg). 3/Causal prophylaxis is possible and should be introduced in every country.

Abstract no.: 29968

DDH REQUIRES EITHER SURGERY (REPOSITIO SIMPLEX) OR OTHER THERAPY? OUR EXPERIENCE IN NON-OPERATIVE REDUCTION OF THE DISLOCATED HIP

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Introduction: In years 1954-1982 dislocated hips were usually operatively treated with „repositio simplex”. In Lublin since January 1982 we reduce dislocated hips in children aged till 18 month with own conservative method. Importance: 3xR (Graf): Reposition/reduction; Retention/permanent containment; Reifung/proper development of hip joint. The most important is the second „R” (stable containment). The new method introduced by T. Karski in 1982 was over 29 years a success. Material: 1227 children: 1581 hips- „over head” extension (1195 hips not treated before). 386 hips wrong/incorrect treated before: 209 children (among 386) with fixed dislocation; 77 (among 209) with severe fixed dislocation. Lublin treatment. “Over-head” extension for 6-8-14 weeks with thermotherapy and internal rotation, next „special procedure for retention/containment of head in acetabulum” (presented on slides). Conclusions: 1/Treatment of hip dislocation is difficult, requires knowledge and experience. But not every young child must be operated on (!), 2/We apply “containment” in children aged from some months till 1.5 year according to Lublin method. 3/ Among 386 children (primarily incorrectly treated outside Lublin in years 1970-2001) the new method resulted in: 80% treated with “containment” were totally cured without additional operation; 20% gained reduction of head but required additional surgeries in older age (dyplastic roof, enlarged AT angle); only in one child (aged 18 months) primary operative procedure was necessary.

Literature:www.ortopedia.karski.lublin.pl

Abstract no.: 29969

MANNUS VALGUS: A RARE PRESENTATION OF OSTEOMYELITIS OF SHAFT RADIUS

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Mannus Valgus, a rare presentation after an osteomyelitis of shaft radius. Case: A 5 year old male presented to the OPD with history of trivial trauma to the right side wrist around 1 month back managed at a private institution, with some surgical intervention (Incision and drainage). On examination, patient had a scar mark over dorsal aspect of middle one third of the forearm and manus valgus deformity. Patient had a discharging sinus over the scar mark and had history of discharge of bone pieces from it. On serial radiological examination patient had a pathological slip of the distal radial physis and osteomyelitic changes in the middle third of the radius initially which gradually led to sequestration of the distal third of radius which was probably taken out at exploration initially. At presentation to us, the patient was left with an infected gap nonunion of radius with destruction of distal radial epiphysis and a grotesque manus valgus deformity. In view of the deformity and non functional extremity, the patient was taken up for centralization of ulna to create a single bone forearm and ulnocarpal fusion. We discuss the clinical, pathological and radiological features and treatment results of reconstruction of the forearm and the wrist deformity, with centralization of ulna and ulnocarpal fusion.

Abstract no.: 29970

**BLOUNT DISEASE – EXPLANATION OF ETIOLOGY; CONNECTION WITH
“SYNDROME OF CONTRACTURES” (MAU): TREATMENT AND
PROPHYLAXIS AS A VERY EARLY PREVENTIVE PROGRAM AGAINST
GONARTHROSIS**

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KALAKUCKI

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Introduction: Varus deformity of lower extremities is a cosmetic problem in babies and in children. If not treated properly it leads with time to gonarthrosis, pain and insufficiency of gait. Etiology of Blount disease in children according to Lublin observations is not primarily necrotic or genetic deformation but related to: a) excessive physiologic varus of shanks in newborns; b) too early standing and walking (!); c) overweight; d) rickets (T.Karski and coll. - Orthop. Praxis). „Lublin” conservative therapy since 1981: 1/ children receive daily proper doses of Vitamin D-3; 2/ total limitation of child's „walking” and „standing” for 4-6 months; 3/ child's body weight reduction; 4/ in some children corrective orthoses (soft-cast). Effectiveness on total material of 520 patients in years 1981-2007 is 99.9% - correction of axis to normal. The proper age for such treatment is from 1-st to 3-rd year of life. Older children require operative procedures. Conclusions: 1/ In years 1954-1980 in Lublin we operated 1-3 children per month because of Blount disease. 2/ Since 1981 after introduction of “non operative-early treatment” we operate no more than 1-3 children per year. 3/ The presented method is an effective protection against gonarthrosis in adults.
Literature: www.ortopedia.karski.lublin.pl

Abstract no.: 29971

FEMOROACETABULAR IMPINGEMENT (FAI) SECUNDARY TO SLIPPED CAPITAL FEMORAL EPIPHYISIS (SCFE)

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Introduction: Studies have shown early lesions of the labrum and cartilage as a result of FAI after mild SCFE treated by in situ pinning. **Material and Methods:** Evaluation of 25 patients with mild SCFE, unilateral, treated by in situ pinning for over 5 years (mean follow-up of 13 years) FAI symptoms recorded. Clinical examination of both hips was done: range of motion; impingement provocation, decompression and apprehension tests. Harris Hip Score was assessed. The radiological evaluation included anteroposterior pelvic radiograph and lateral cross-table, Dunn, and Lequesne views of both hips looking for FAI and osteoarthritic changes (Tönnis). **Results:** FAI symptoms found in 4% of patients. 20% with positive specific impingement tests. Mild limitation of flexion, abduction and internal rotation of affected hip found. All patients with good and excellent HHS, but significantly worse in the affected hip ($p<0,001$). Radiographically, there was significant increase in the alpha angle of Nötzli of the affected hip ($p<0,001$). No changes suggesting PINCER type FAI. There were degenerative changes Tönnis 1 and 2 in 25% of patients. **Discussion/Conclusion:** Few symptoms and signs of FAI found after treatment of SCFE with in situ pinning, supporting this treatment in mild SCFE. However, radiological evaluation showed CAM type FAI in almost all patients and some signs of articular degeneration. These radiological findings support restoring the anatomy in SCFE by open reduction and internal fixation to avoid FAI, as proposed by Slongo and Ganz (2008); and Adolfsen and Sucato (2009).

Abstract no.: 29976

DESMOPLASTIC FIBROMA OF ULNA - A VERY RARE CASE REPORT

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Desmoplastic fibroma is a rare, well differentiated, locally aggressive fibrous tumor arising from soft tissue or bone. It comprises less than 0.1% of all primary bone tumors. The most common site of affection is the jaw, followed by the long bones [5]. Only rarely has desmoplastic fibroma been found to involve the bones of the forearm. Literature search has revealed only a few case reports of involvement of bones of forearm. We are presenting a case of a 15 year old male presenting with giant desmoplastic fibroma arising from proximal two- third of ulna. We are also describing a unique technique of reconstruction of the olecranon process with the articular surface of the fibular head. The patient was treated with wide excision of the tumor. Involved ulna was excised en bloc from the proximal extent of the tumor, including half of the olecranon process and distally upto about 9 cm from the wrist joint. Reconstruction was carried out using autologous fibula graft. Fibular head and diaphyses measuring 18cm was harvested from ipsilateral leg. The head of fibula was designed to match the olecranon process and using the articular surface of the fibula head to articulate with the trochlea. Histopathology confirmed the diagnosis. Patient was followed up for two years with no evidence of recurrence. Elbow range of motion was 20- 140 degrees and was pain free.

Abstract no.: 29980

SINGLE PIN SUPRA-ACETABULAR EXTERNAL FIXATOR TOGETHER WITH PERCUTANEOUS ILIOSACRAL SCREWS IN TREATMENT OF UNSTABLE PELVIC RING DISRUPTIONS WITH RUPTURE LOWER URINARY TRACT

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Displaced lesions of the pelvic ring including either a vertical fracture of the sacrum, or dislocation of sacroiliac joints, often pose problems of reduction and fixation. These lesions optimally stabilized with internal osteosynthesis, which is performed by open surgery under visual control or by combined open and closed methods in conjunction with percutaneous iliosacral screws. In cases of fracture pelvis associated with rupture lower urinary tract, anterior symphyseal plating may hinders the following procedures in order to repair the lower urinary tract. This work presents our experience in treating unstable pelvic ring disruptions associated with rupture urinary bladder or posterior urethra by single pin supra-acetabular pelvic external fixator together with percutaneous iliosacral screws under 2D-fluoroscopic control in supine position. 12 patients presented with fracture pelvis type C associated with rupture lower urinary tract. All were men, ages averaged 28 years. Pre-operative planning and operative techniques were described. Union of the fracture was achieved in all cases. Time to fracture union averaged 6 weeks. 1 patient (8.33%) developed pin track infection. No case had injury of lateral cutaneous nerve of the thigh. 9 patients (75%) were pain free, 2 patients (16.66%) had mild posterior pain on lengthy walks and one (8.33%) had persistent pain. All patients had an almost no limb length discrepancy. No patient had secondary failure of the screws after external fixator removal. We recommend using this technique as rapid and minimally invasive method in stabilizing pelvic ring disruptions associated with rupture lower urinary tract system.

Abstract no.: 29981

ARE BIMALLEOLAR FRACTURES AND LATERAL MALLEOLAR FRACTURES WITH MEDIAL LIGAMENTOUS INJURY SIMILAR?

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Introduction: The most common mechanism of injury in the ankle is supination-external rotation, resulting in distal fibular fracture followed by internal injury: medial malleolar fracture or deltoid ligament rupture (Lauge-Hansen SER-4). Both injuries are unstable.

Material and Methods: Cross-sectional study to compare the demographic characteristics and functional outcomes of the two most frequent types of unstable ankle fractures. All patients were treated with a similar surgical protocol: restoration of fibular length and fixation with small-fragment plate and screws. The medial malleolar fracture, if present, was reduced and stabilized. Torn deltoid ligaments were not repaired. Two random samples of patients were evaluated and compared (minimum follow-up one year): 30 patients with bimalleolar fractures and 30 with lateral malleolar fractures with medial ligamentous injury. Functional assessment with AOFAS hindfoot score and radiological assessment: consolidation signs, material failure, osteoarthritis signs.

Results: Bimalleolar fractures occurred in older patients (mean age: 49 years old), more commonly in women (60%) and in patients with co-morbidities. Lateral malleolar fractures with medial ligamentous occurred in younger patients (mean age: 37 years old), and more in men (69%). Bimalleolar fractures had significantly worse functional outcomes ($p=0,001$). No differences in complication rates, but more hardware removal in bimalleolar fractures.

Discussion: There are epidemiological differences in these two types of fractures. The type of fracture appears to affect the outcome, probably due to the injury pattern and the energy involved. Diabetes mellitus and smoking increase the likelihood of bimalleolar fracture and worsen the prognosis.

Abstract no.: 29991

**CHALLENGES IN THE MANAGEMENT OF BONE TUMOURS IN SOKOTO,
NORTH WEST NIGERIA**

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Background: Clinicopathologic entities of bone tumours are similar and it requires histology to precisely ascertain the tumour. Clinical findings are helpful in narrowing down diagnostic possibilities. The x-ray feature is sometimes pathognomonic of the gross pathology and this is useful in regions where trained histopathologist is not available. **Objective:** To look at the problems associated with managing bone tumours in our region in view of the limited diagnostic and treatment resources. **Methodology:** This is a retrospective study that involved cases of bone tumours managed at the Usmanu Danfodiyo University Teaching Hospital, Sokoto between January 2010 and December 2010. **Results:** 15 cases of bone tumours were managed with males accounting for 10 and females 5 with M:F ratio 2:1. Age range was between 9 and 50 with mean of 26. All the cases presented with features of advance disease. X ray features suggested bone tumours in all the cases while histology diagnosis was achieved in 8(53%). Common tumours encountered were Osteosarcoma 5(63%), Chondrosarcoma 2(25%) and Giant cell tumours 1(12%). 10 patients had Amputation followed by Chemotherapy, 4 refused treatment and 1 was referred. 1 patient had a recurrence at the amputated stump and died. **Conclusion:** Management of bone tumours remain a challenging problem in our environment in view of their late presentation and absence of complimentary services.

Abstract no.: 29994

LONG TERM RESULTS OF HIGH TIBIAL OSTEOTOMY IN UNICCOMPARTMENTAL OSTEOARTHRITIS KNEE

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High Tibial Osteotomy is a very promising surgery, unfortunately with increasing popularity of arthroplasty is a dying art. In our study of 58 patients, 39 females and 29 males with mean age 54 yrs. 49 patients had KSS (Knee severity Score) < 60 (MEAN 51.5) and 9 had between 60-69 (MEAN 66). 48 patients in the series had Unicompartmental (Medial) osteoarthritis with FFD of 5-10 degrees, 2 patients had FFD of 10-15 degrees & 8 had unicompartmental osteoarthritis with patellofemoral arthritis. Pain Free Flexion was < 60 degrees 24 patients, 60-70 degrees in 28 patients, 70-80 degrees in 6. 3 patients presented with mediolateral laxity of the joint & 1 with anteroposterior laxity. Radiologically 46 patients had varus angulation of > 15 degrees and 12 had 10-15 degrees. 2 patients had previous history of trauma on the affected knee. All were operated by Lateral Closing wedge osteotomy augmented with Coventry staples. Post-op all were given cylinder cast for 1 month after which controlled supervised physiotherapy was started. 56 patients achieved pain free flexion of >90 degree (MEAN 120 degrees) & 2 had 90 degrees of flexion. On 5 year F/U the KSS score was 70-79 (MEAN 76) in 23 patients and 80-95 (MEAN 85) in 35 patients. Survivorship was 100 % at 5 year & 10 years follow-up. We have noted improvement in patellofemoral arthritis after HTO in all 8 due to improved patellofemoral index. Overall the patient satisfaction was high & gratifying for the surgeon on medium & long term followup.

Abstract no.: 29995

**METAL INJECTION MOULDED FRACTURE FIXATION PLATES AND
ORDINARY ORTHOPAEDICS PLATES: A COMPARISON
OF BIOMECHANICAL STUDIES**

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Introduction: Stainless steel 316L plate is used in orthopaedics implants due to their biocompatibility, strength, excellent corrosion resistance, and ability to form a direct bone-to-metal interface. **Methodology:** Metal Injection Moulding (MIM) is a new venture site for fabrication of medical implants, particularly orthopedics applications. The biomechanics properties of 6 holes metal implants are determined by comparing the ultimate tensile strength, density, hardness, Young's modulus and elongation of standard narrow compression plate, 6 holes with length of 103 mm. The study instruments used for Ultimate Tensile Strength and Young's Modulus is Series IX Automated Material Testing System 8.33.00. Hardness readings were obtained using Vickers hardness equipment. The ductility of the plates was measured by Digital Vernier Calliper to measure the elongation percentage. **Result and Discussions:** 1. The results show that the mechanical properties of MIM implant were equivalence with the commercially available machining implants. 2. 6 holes stainless steel implant fabricated via MIM has UTS (ultimate tensile strength) that is within the range of UTS of other commercially available implant fabricated via machining. 3. MIM has the highest Young's Modulus which means MIM has the greatest ability to resist deformation when a force is applied. **Conclusions:** The studies showed that metal injection moulding Implant can be use as an alternative manufacturing method to fabricate fracture fixation plates. The mechanical properties of MIM plates showed it is in range similar to those fabricated via machining processes which are now commercially used.

Abstract no.: 29996

CHONDROCYTE DEVELOPMENT IN HYALURONAN-TYRAMINE CROSS-LINKED HYDROGEL

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Cartilage replacement by scaffolds made of various materials and seeded by autologous cells is a promising tool for treatment of damaged cartilage. Among suitable replacement materials, hyaluronan (HA) takes forefront place. The aim of this work was to characterize chondrocytes development in scaffolds prepared from HA-tyramine (HA-TA) derivative. Human and porcine chondrocytes (passage 3-4) were seeded into HA-TA scaffolds cross-linked in presence of horseradish peroxidase and hydrogen peroxide. Determination of cell viability, histological analysis, and determination of gene expressions of collagen, matrix metalloproteinases (MMP), SOX9, and aggrecan were performed during 3 weeks of cultivation. Porcine chondrocytes were found to proliferate inside the scaffold. No such observation was made in case of human chondrocytes. Both types of cells were forming clusters after 14 days of cultivation. After 21 days of cultivation cells were positively stained by Fast Green dye. Immunohistochemical analysis revealed deposition of collagen type I and II. Expression of genes characteristic for chondrocyte differentiation revealed successful chondrocyte re-differentiation. MMP-1 and MMP-3 had decreasing tendency while MMP-13 showed slow increase during cultivation. Expression of SOX9 and collagen type X remained unchanged. These results suggest that HA-TA derivative may be a promising scaffold material for cartilage reconstitution.

Abstract no.: 29998

**90 DEGREE STRAIGHT LEG RAISING HAMSTRING LENGTHENING IN
NON-AMBULATORY PATIENTS WITH CEREBRAL PALSY**

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A novel approach of 90 degrees straight leg raising hamstring lengthening was conducted in a consisted manner in sixty-eight non ambulatory patients with spastic cerebral palsy. The mean length of follow up was 7 years 3 months (range 2years 4months -13years). Fifty-one of the sixty-eight patients had at least one level improvement in their Gross Motor Function Classification score. The popliteal angle improved from a mean of 118 degrees preoperatively to 164 degrees ($p<0.0005$). Straight leg raising improved from a mean of 53 degrees preoperatively to 70 degrees measured at the most recent follow up postoperatively ($p<0.0005$). None of our patients had regression of the popliteal angle and straight leg raising to the preoperative level. 17 patients (25%) got regression of their improvements over the follow up period with recurrence of knee flexion and crouch posturing and gait. This regression with crouch is considered a clinical recurrence. Of several selected variables, only limitation of straight leg raising preoperatively was of statistical significance ($p<0.003$) for the prediction of recurrence. Nineteen patients (27.9%) had a mean recurvatum of 6 degrees, range (3-10).With the most recent follow up only eleven (16.1%) patients persisted with recurvatum at stance and gait. All the aforementioned variables as patient age, GMFCS, the popliteal angle and straight leg raising showed no statistically significant correlation on the rate of recurvatum.

Abstract no.: 29999

SMASHED ELBOW TREATED BY DOUBLE COLUMN TBW

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Anatomic reduction and rigid internal fixation is considered the gold standard for the most displaced intra-articular distal humerus fractures [AO/OTA 13 C1 C2] . Rigid internal fixation allows fracture healing, permitting early ROM to maximize functional recovery . The smashed elbow is particularly prone to stiffness. Bulky hardware strips more periosteum leads to failure and articular non –union or fragmentation. With the minimum hardware TBW was persuaded in 10 cases of closed comminuted fractures of distal humerus from 1990 to 2010. Medically fit and stabilized patients with uncompromised soft tissues were best managed within 24- 48 hours. The elbow opened by posterior approach through transverse olecranon osteotomy. Intrafragmentary compression by a cannulated – cancellous lag screw fixation done for inter condylar articular fragment. Thus fixed articular fragment was ready to assemble with the shaft of humerus at lateral and medial columns by TBW. Wire tensioning was done simultaneously at both columns to maintain the height of metaphysis humerus. The olecranon osteotomy was also fixed by TBW. The principles of anatomical restoration of joint surface, least periosteal stripping, bicolumnar tension band wiring fixation, allowed early range of motion employed good outcomes to be expected for such patients. Average result was 80% good to excellent. Functional range of motion 30 to 130 degrees attained. The isometric strength of the affected elbow was less as compared to normal elbow, although the grip and pinch strength were alright.

Abstract no.: 30001

BILATERAL SYMMETRICAL METACHRONOUS MYXOFIBROSARCOMA

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A 60 year old female was referred with a right buttock mass. There was no past medical or family history. Examination revealed a large tender mass, tethered to the muscle and no lymphadenopathy. MRI scan revealed a mixed signal on the surface of gluteus maximus extending into the superficial fat, compatible with sarcoma. Biopsy confirmed high grade myxofibrosarcoma (Trojani grade 3) and CT scan chest revealed no evidence of metastasis. The 14x14cm tumour was excised en-bloc. Histology confirmed the diagnosis with clear margins and the patient received local radiotherapy (50Gy in 20#). Examination and MRI scan one year later revealed no evidence of recurrence. Thirty months later, she returned with a left buttock mass and sciatic nerve dysfunction. MRI scan and biopsy revealed a Trojani grade 3 myxofibrosarcoma symmetrical to the previous tumour. CT scan chest again revealed no metastasis. The patient underwent excision of the 20x20cm tumour with sacrifice of the common peroneal division. She recovered well, received more local radiotherapy and has an ankle-foot orthosis. This is the first citing of myxofibrosarcoma presenting symmetrically and metachronously. Also known as myxoid variant of malignant fibrous histiocytoma, this is one of the most common sarcomas in elderly people, often occurring in the dermal and subcutaneous tissues. In this case, the second tumour was not located within the previously irradiated area and there was no genetic predisposition or family history. There was no evidence of metastatic spread allowing us to postulate that two separate primary tumours of identical type presented metachronously.

Abstract no.: 30004

BIOSAFETY AND BIOCOMPATIBILITY MEASURES OF METAL INJECTION MOULDING (MIM) ORTHOPAEDIC IMPLANT: A CYTOTOXICITY STUDIES

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These methods are useful assessment of cytotoxicity that provides useful information in predicting the potential clinical applications in the human. OBJECTIVES: 1. To assess the cytotoxic potential of test material (Metal Injection Moulding (MIM) Implant) by determining the rate of cell proliferation. 2. To assess the cytotoxic potential of a test material extract of MIM using a mammalian cell line as the target cells. Methodology: MTT Assay: The degree of cytotoxicity in a mammalian cell culture in response to the test material was determined. Sample was prepared by extracting the MIM with growth medium at 0.2 g/ml for 72 hours at 37°C. The test material was tested in triplicates. MEM Elusion Assay: The degree of cytotoxicity in a mammalian cell culture in response to the test material extract was determined. Extraction of MIM Test material was carried out at 37°C for 72 hours using growth medium as the extractant. The test material was tested in triplicate. Results: 1. Test Material did not demonstrate an inhibition of V79 cell proliferation after 24-hour exposure. (MTT Assay) 2. There was no cytotoxic effect (grade 0) observed in all extract concentrations of the test material (MEM Elusion Assay). CONCLUSIONS: MIM implant material did not demonstrate a cytotoxic effect under the condition of MTT assay and MEM Elusion Assay. The test material showed good biosafety and biocompatibility characteristic of the MIM.

Abstract no.: 30005

ASSESSMENT OF ATYPICAL CLUBFEET BY ULTRASOUND

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BACKGROUND: It is well known that atypical clubfeet are difficult to treat and demand some modifications of the Ponseti protocol to obtain a good result. We wanted to find out if ultrasound investigation can reveal any morphological differences compared to "conventional" clubfeet. **MATERIAL:** Sixteen clubfeet (ten children) with more or less atypical characteristics were investigated. **RESULTS:** In 2/3 of the feet the following characteristics were found: Due to the severe cavus deformity the navicular was both plantar and medially dislocated. This is not fully revealed by the standard coronal, medial and sagittal projections. By tilting the probe laterally from the sagittal plane, an oblique image plane is obtained revealing the navicular dislocation underneath and medial to the head of the talus. When pressure is applied under the metatarsals it can be dynamically visualized how the navicular is lifted up in front of the head of the talus. In the calcaneo-cuboid joint more medial-plantar translation of the cuboid is found. In other clubfeet you mainly find a medial angulation of that joint. If there is a severe plantar dislocation of the cuboid it can be difficult to visualize the calcaneus and the cuboid in the same coronal image plane. A sagittal image plane through the calcaneo-cuboid joint reveals a step between the two bones. **CONCLUSION:** Adding special projections to the standard protocol the characteristic deformities of atypical clubfeet can be assessed by ultrasound. Thus ultrasound can be a useful tool in diagnostics and treatment evaluation of these feet.

Abstract no.: 30006

BIOMECHANICAL ANALYSIS OF THE OPTIMUM CAGE POSITION ON THE ALIF WITH FACET SCREW FIXATION

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Anterior Lumbar Interbody Fusion (ALIF) has been widely used to treat internal disc degeneration. However, different cage positions and their orientations may affect the initial stability leading to different fusion results. The purpose of the present study is to investigate the optimum cage position and orientation for aiding an ALIF having a transfacet pedicle screw fixation (TFPS). A three-dimensional finite element model has been developed to simulate the stability of fusion segment under five different loading conditions. The Taguchi method was used to evaluate the optimized placement of the cages. Three control factors and two noise factors were included in the parameter design. To identify the optimized cage positions, the objective was to investigate the best set of the control factors to obtain the lowest axial displacement, the smallest rotational displacement, the smallest total strain energy of the facet screws. The significance of the design factor of the cage position was estimated by the analysis of variance statistical method. From the results of the FEA and the Taguchi method, the optimum cage position setting was found to be as follows: (1) Cages should be placed in the anterior intervertebral space; (2) The distance between the two cages should be wide; and (3) the angle between the two cages should diverge along the posterior direction. The results show that the optimum cage position simultaneously contributes to a stronger support of the anterior column and lowers the risk of TFPS loosening.

Abstract no.: 30007

NON-ABSORBABLE VERSUS ABSORBABLE SUTURE ANCHORS FOR ARTHROSCOPIC BANKART REPAIR OF ANTERIOR TRAUMATIC SHOULDER INSTABILITY

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INTRODUCTION: Suture anchors facilitate the surgical repair of capsuloligamentous structures. Arthroscopic Bankart repair is known as gold standard for anterior shoulder instability. Bioabsorbable suture anchors, which obviate potential pitfalls in the periarticular use of permanent implants, have recently become available. The aim of this study was to evaluate outcomes following arthroscopic Bankart repair performed with non-absorbable and absorbable anchors. **METHODS:** During 2008-2009 we performed 25 arthroscopic Bankart repair for anterior traumatic shoulder instability of isolated avulsion of the anterior glenoid labrum with non-absorbable - TwinFix Ti 3.5 (Smith & Nephew) (8 patients) and absorbable - Lupin (DePuy Mitek) (17 patients) - anchors. The average patient age was 26 years (range, 15 to 54). The patients had a history of recurrent traumatic anterior instability that had not improved with nonoperative management. The same surgical technique and rehabilitation protocol were used in both groups. All operations were performed by the same experienced surgeon. Length of follow-up was 1 to 2 years. The incidence of recurrent instability and the shoulder joint function were recorded using standard scales. **RESULTS/DISCUSSION:** There were no failed results in the non-absorbable anchor group and absorbable anchor group. No significant subjective or objective differences were found at an average of 18 months postoperatively. **CONCLUSIONS:** No differences in outcomes of arthroscopic Bankart repair were seen whether absorbable or non-absorbable anchors were used. Both are highly effective. No differences in rate of recurrence or shoulder joint function were noted in both groups.

Abstract no.: 30014

TRAUMA MANAGEMENT BY JESS FOR THE UPPER AND LOWER EXTREMITIES

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ABSTRACT: Joshi's External Stabilisation System (JESS) developed by Dr. B.B. Joshi, JESS fills a lacuna in the field of mini external fixators for the hand and foot. It encompasses basic clamping devices to hold bone pin and rod connection, hinges to provide for adequate positioning of the joints and distraction / compression devices, which allow for external forces needed for compression or distraction. The components of JESS provide the basic building blocks for the surgeon to plan, execute and innovate methods of external stabilisation to augment established principles of management. They allow for great diversity in frame construction and is virtually limitless in its potential clinical applications permitting early rigid stability in skeletal and soft tissues in acute trauma. We present here a series of cases treated by the JESS External fixation device in the upper and lower extremities. Complex fractures of the hand, wrist, humerus and forearm are treated with simple frames which can be easily applied by a relatively less experienced surgeon using simple instrumentation. This technique has also been used to fix fractures of the lower limb like the tibia, ankle and metatarsal fractures in adults. This technique has the advantage that it is not technically demanding, has a versatile application and can be used in a relatively less sophisticated surgical setup. It provides a simple solution to complex problems especially in osteoporotic bones and is very cost effective.

Abstract no.: 30015

**GENOTOXICITY STUDIES OF REVERSE MUTATION ASSAY,
MICRONUCLEUS ASSAY AND ALKALINE COMET ASSAY FOR METAL
INJECTION MOULDING (MIM) AS AN ORTHOPAEDIC IMPLANT**

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These studies are very important to determine the biosafety and biocompatibility of the Metal injection metal implant. OBJECTIVES: 1. To assess the potential clastogenic and aneugenic effects of MIM by determining the formation of small chromosomal fragments (micronuclei) in the cytoplasm of interphasing mammalian cells. (Micronucleus Assay) 2. To assess the potential of DNA strand breaks (damage) of a single mammalian cell following contact with MIM (Alkaline Comet Assay). 3. To determine the adverse mutagenic effects of MIM using *Salmonella typhimurium* bacterial strains as the target cells.(*Salmonella* Reverse Mutation Assay) Methods Micronucleus Assay In vitro: Alkaline Comet Assay: *Salmonella* reverse mutation assay (Pre-incubation method): RESULTS: 1. The number of micronucleus formed in cells treated with MIM corresponded to that of negative control. (Micronucleus Assay In vitro) 2. Average scores in DNA damage for MIM concentrations produced Tail moment values less than 5.(Alkaline Comet Assay) 3. The number of revertants from all bacterial tester strains treated with MIM extracts did not exceed twice than those in the negative control, (*Salmonella* reverse mutation assay) CONCLUSIONS 1. MIM is not clastogenic and non genotoxic under the condition of this test (Micronucleus Assay In vitro) 2. MIM did not cause DNA damage is considered non-genotoxic. (Alkaline Comet Assay) 3. MIM did not demonstrate a mutagenic effect and is not considered a mutagen (*Salmonella* reverse mutation assay)

Abstract no.: 30018

PATELLOFEMORAL OSTEOARTHRITIS IN YOUNG PATIENTS: IS THE SOLUTION ARTHROSCOPIC?

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Patellofemoral arthritis is a common morbidity in young population and has got very few effective treatments. Physical therapy alone is not a solution and patellofemoral arthroplasty has variable success. The only alternative is arthroscopic debridement with or without viscosupplementation. In a pilot study preceding a prospective randomized trial the above two groups are compared. 20 patients are recruited in each group, all were given the treatment options randomly and full informed consent was taken. Tricompartmental arthritis confirmed on x-ray was excluded. Pre and post operative HSS scoring was done besides SF36 and visual analog score. In the first group the patients had undergone arthroscopic debridement followed by viscosupplementation in 4 weeks and in the second group patients received only viscosupplementation. In either group physical therapy was initiated. The scores were collected at 6weeks, 6months and then yearly. In the Pilot study 10 in each group were taken and one year follow up was studied. Male: Female ratio was 1:3. At one year follow up patients with arthroscopic debridement had a significantly better score ($p<0.05$) as compared to the group who had viscosupplementation alone. Visual Analog Score was improved (85%) in the arthroscopic debridement group too. In conclusion, arthroscopic debridement, Viscosupplementation and physical therapy combined have a better therapeutic outcome in patellofemoral osteoarthritis than viscosupplementation alone.

Abstract no.: 30020

RESULT OF AUGMENTATION OF DYNAMIC HIP SCREW FIXATION IN UNSTABLE TROCHANTERIC FRACTURES WITH INNOVATIVE DEVICE – A PROSPECTIVE STUDY OF 105 PATIENTS

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Trochanteric fractures comprise of 50% of all fractures of proximal femur and unstable intertrochanteric hip fractures account for approximately one quarter of all hip fractures in the elderly and are increasing in frequency. Due to the unstable fracture pattern often the surgeon is in dilemma with the choice of implant. Most implants like trochanteric stabilization plate, are time consuming and require technical expertise to achieve desired result. In this scenario we found DHS plating with a derotation screw to be effective & simple technique. Some technical problems like parallel placement of two screws in a tight compartment required excess time & radiation. To counter this problem we devised a Zig that enables accurate parallel screw placement with multitude of options with no requirement of Radiographic confirmation after the procedure is done. 105 consecutive patients with Peritrochanteric fracture were treated with a sliding compression hip screw with a four-hole side-plate and additional 6.5mm derotation screw with the help of maheshwari zig (patented). The fractures were classified on preoperative radiographs according to the AO/OTA classification system. All fractures united uneventfully with a mean time of 14 weeks without any perioperative complication. We have documented radiographic evidence of additional compression at the fracture site after placement of derotation screw due to accurate parallel placement of the screw in both sagittal & coronal planes. No complications like revision of screw placement, guide wire breakage were encountered. The device decreased the surgical time, radiation and hence morbidity to the patient.

Abstract no.: 30022

OGDON'S TYPE IV-B INJURIES OF THE DISTAL HUMERAL EPIPHYSIS

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A new type of injury of the distal humeral epiphysis is reported for the first time in the literature. To the best of our knowledge this type of injury has not been described by anyone before. This is seen in children between 8 to 12 years of age. There is a T-Y type of fracture of the distal humeral epiphysis. It is caused by fall on out stretched hand and an adduction force. There is distraction force which pulls the lateral part of the distal humeral epiphysis and a compression force which fractures the medial part. This can not be classified anywhere within the Salter- Harris classification system. However it can fit into the Ogdon's classification as type IV-B injuries. Ogdon described these types of injuries for epiphysis of proximal humerus and distal tibia. He did not report these for distal humeral epiphysis. We have seen 31 such cases. The injury described in this article is different from what has been described as T-Y fractures of the distal humerus in children because here the fracture line passes below the olecranon fossa and not through the floor of the fossa. It resulted from a varus force, whereas the T-Y fractures are caused by a direct hit due to fall on the point of elbow.

Abstract no.: 30033

DOES ABNORMAL OSSEOUS ANATOMY OF COSTAL SURFACE OF SCAPULA CAUSE SNAPPING SCAPULA SYNDROME?

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Snapping scapula has widely been used to describe audible crepitus in scapulothoracic region associated with simple discomfort to truly disabling condition. Abnormal anatomy of costal surface of scapula may disrupt smooth scapulothoracic movements and may cause snapping scapula. Aim of this study was to evaluate the morphology of costal surface of scapula and its possible role in the etiopathogenesis of snapping scapula syndrome. Various morphometric parameters such as superomedial angle, depth of costal surface, forward angulation of root of coracoid process and thickness of superior and inferior angles of 115 dry intact adult scapulae of unknown sex were studied. Superomedial angle ranged from 121° to 164° ($143.26^\circ \pm 8.17^\circ$). The forward angulation of root of coracoid process ranged from 119°-163° ($140.56^\circ \pm 7.45^\circ$). Depth of costal surface at the level of root of spine varied widely between 10.3mm and 27.2mm ($15.95\text{mm} \pm 3.49\text{mm}$). Thickness of superior and inferior angles measured $3.40\text{ mm} \pm 0.79\text{mm}$ and $6.82\text{mm} \pm 1.33\text{mm}$ respectively. Forwardly bent Rhinoceros horn like projection at the lateral border of scapula projection was seen in 3 scapulae (2.61%). Morphometric variations in the anatomy of costal surface of scapula observed in the present study may be clinically significant in the causation of snapping scapula syndrome.

Abstract no.: 30039

**COMPARATIVE STUDY REGARDING TISSUE RESPONSE TO THREE
OSTEOCONDUCTIVE BONE GRAFT SUBSTITUTES**

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The aim of this study is to reveal the integration, bone reaction and extent of osseous healing for 3 types of osteoconductive graft substitutes used on experimental bone defects performed in rabbit femurs. We have performed an in vivo study on 2 groups of 6 rabbits with induced bone defect in distal femoral epiphysis. We have used 3 types of BGS: Eurocer 400 (FH Orthopedics) – a biphasic BGS (55% hydroxyapatite and 45% tri-calcium phosphate), as granules; Eurobone (FH Orthopedics) an injectable BGS (55% bi-calcium phosphate and 45% tri-calcium phosphate); Osteoset (Wright) – calcium sulphate BGS as pellets. The bone defect in the first group was filled with Eurocer400 on the right femur and with Osteoset in the left femur. In the second group, the bone defect on the right femur was filled with Eurobone and the left femur with Eurocer400. The rabbits were sacrificed at 2 months after bone graft implantation and radiologic and histological examination were performed. Periimplant bone fragments were cut, processed and decalcified. Serial sections were stained by hematoxylin-eosin and van Gieson technique. X-ray examination showed a good osseointegration for Eurocer and Eurobone. The 2 main disadvantages of Osteoset pellets are the poor biological integration and fast resorption. However, we have remarked a poor density of the material at 2 months post-implantation, with important fragmentation at the implantation place. Eurocer and Eurobone showed a good osseointegration with new bone formation. Osteoset pellets must be used in cavity defects with small contact surface for fluids.

Abstract no.: 30041

THE USE OF HOOK PLATE IN THE TREATMENT OF THIRD DEGREE ACROMIOCLAVICULAR JOINT DISLOCATION ACCORDING TO ROCKWOOD IN THE REFERENCE TO OTHER METHODS OF TREATMENT

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GOAL AND ASSUMPTIONS OF DISSERTATION: The main dissertation goal is the comparison of acromioclavicular joint dislocations' treatment effects with the use of hook plate towards conservative and other operative methods. **MATERIAL AND METHODOLOGY:** We took under our observation cumulatively 58 diseased. 21 patients were treated with the use of hook plate (first group), 18 with Bosworth's method (second group), 19 with conservative therapy (third group). We have used Constant Score scale to the clinic assessment of treatment effects. For radiological assessment we have used acromioclavicular joint radiogram in AP stress projection, where we were measuring coracolavicular distances. Average time of observation was 18.7 months. **RESULTS:** Constant Score on average was: in the first group 92.7, 87.3 in the second and 81.2 in the third group. Coracolavicular distances on average were: in the first group 11.8 mm, 12.7 mm in the second group and 16.4 mm in the third group. **CONCLUSIONS:** The best results in the treatment of third degree acromioclavicular joint dislocation according to Rockwood we have achieved with the use of hook plate. Surgical treatment results only in low degree have surpassed the conservative therapy.

Abstract no.: 30042

**LATERAL CONDYLE FRACTURES OF THE HUMERUS IN CHILDREN
WITH PRE-EXISTING CUBITUS VARUS DUE TO PREVIOUS TRAUMA**

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Twenty-six cases of lateral condyle fractures of the humerus in the children with pre existing cubitus varus deformity from previous elbow fracture (supracondylar-17, transcondylar-5,T-Y type 4) seen by the author during last 17 years are reported. It is proposed that post traumatic cubitus varus deformity may predispose a child to subsequent lateral condyle fractures and should be viewed as more than just a cosmetic deformity. A two stage treatment is recommended.In the first stage the lateral condyle is anatomically reduced and fixed with K-wires. When the fracture is healed, the K-wires are removed and the elbow regained full range of movement, the second stage is performed by valgus supracondylar osteotomy of the distal humerus.

Abstract no.: 30043

INNOVATIVE DEVICE TO FABRICATE ANTIBIOTIC IMPREGNATED CEMENTED BEADS

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Antibiotic beads have gained wide acceptance in orthopedics in the treatment of a variety of skeletal infections due to their ability to provide high concentrations of antibiotic at the site of infection while avoiding the complications associated with systemic toxicity. Traditionally, beads have been made by hand in the operating room on the back table during the case. This is a time consuming and cumbersome process, and is an inefficient use of resources. The antibiotic is not uniformly distributed, the bead size and shape is inconsistent and the beads are not well attached to the wire. In addition, the methylmethacrylate monomer, known to be toxic to musculoskeletal tissue, is still present for the first two hours after mixing the beads. Prefabricated beads are less expensive and easier to use. They allow for more uniform delivery of the antibiotic and are of better quality and consistency than hand made bead. The purpose of this innovation is to simplify procedure, improve quality, efficiency, versatility as culture specific antibiotic impregnated beads can be made with the same device and decrease cost of bead production by reducing wastage and manpower. Using the 'MAHESHWARI BEAD FABRICATOR' we were able to produce more than twice the bead chains of 6.5 mm beads (10 beads/chain) from 40gm cement as compared to hand made method. This adds up to significant cost saving to the surgeon. Beads of various sizes can be fabricated with this device so as to facilitate their passage into tight spaces including intramedullary canal.

Abstract no.: 30046

**MONTEGGIA FRACTURE AND EARLY MOBILISATION – THE SCREW
AND SUTURE AT A “KEY POINT” OF THE JOINT**

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BACKGROUND: It is common opinion that reconstruction of the annular ligament is not necessary in the treatment of acute Monteggia fractures! Once the ulna is surgically reamed and held in the proper position, the radial head almost always will return to the correct position. Type (Bado) I, III, and IV lesions are held in 110 deg. of flexion, and type II lesions with posterior dislocations should be maintained in about 70 deg. of flexion for a few weeks. We managed these injuries using postulate: Stabilised ligament - capsular complex of the radial head provide sufficient stiffness to allow early postoperative full motion resulting in an enhanced functional outcome. **METHOD:** Posterolateral/anconeus surgical approach to ulna. First is to obtain length and alignment of ulna (plating), which then allows the radial head to be reduced. Second is to obtain enough stability of the proximal radio-ulnar joint to allow immediate intraoperative full motion. Application of bicortical screw transversally in ulnar proximal part where we find a “mechanical key point” of the joint, double loop over the screw head and suture of the capsule completely and dynamically stabilise the joint. **CONCLUSIONS:** Factors leading to poor results in Monteggia fracture treatment are failure to obtain anatomical reduction of the ulna, what result in recurrence of dislocation, instability of the radial head or radiohumeral ankylosis. As solution - we emphasise surgical stabilisation and early postoperative mobilisation of the proximal radio-ulnar joint. We consider Monteggia fracture as an intra-articular fracture from the point of postoperative treatment.

Abstract no.: 30049

DIFFICULT REVISIONS OF HIP ARTHROPLASTY WITH MODULAR LONG STEMS

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Background: Repeated revision hip arthroplasty can be very difficult because of poor proximal bone due to bone resorption, periprosthetic fracture or infection. In those cases we use long femoral modular stems with distal screw locking (FSDL). **Methods:** We analysed data of patients who were revised with FSDL in our orthopaedic department from December 2006 to August 2010. Reasons for revision were aseptic loosening in 11 cases (59%, 1 case after tumor endoprosthesis), peri-prosthetic fracture in 5 cases (26%), both in 1 case (5%), septic loosening after periprosthetic fracture in 1 case (5%) and implantation after Girdlestone operation after recurrent prosthetic infection in 1 case. **Results:** During 57-months period 19 patients (12 females, 7 males; aged from 40,5 to 86,7 years) were operated. Revised arthroplasty was second operation in 8 cases (43%), third operation in 7 cases (37%), fifth operation in 2 cases (10%), eight operations in 2 cases (10%). Revision procedure was performed 16,6 years (22 days to 40,5 years) after first implantation of endoprosthesis (not first operation of hip). In two cases (10%) later revision was needed- both because of infection (one early, one late, later had 2 prior dislocations). Nine patients (47%) did not need any assistive device on last follow up, four used one crutch (21%), five uses two crutches (26%) and one still uses walker. **Conclusions:** In difficult cases of multiple revision arthroplasty it is necessary to have some surgical solution to those cases. In our experience FSDL show good immediate and short term results.

Abstract no.: 30050

CONCOMITANT DEFICIENCY OF QUADRICEPS AND PATELLAR TENDONS: SURGICAL OUTCOME FOLLOWING USE OF LIGAMENT AUGMENTATION AND RECONSTRUCTION SYSTEM (LARS)

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Concomitant deficiency of quadriceps and patellar tendons, presenting as chronic injury, is rare. Simultaneous surgical reconstruction of concomitant deficiency of quadriceps and patellar tendons poses a unique challenge. We are reporting chronic concomitant deficiency of quadriceps and patellar tendons, which we managed surgically by using LARS (Ligament Augmentation and Reconstruction System, Corin). A 50-year old man was referred to our clinic with anterior pain and instability of right knee, after he slipped downstairs about 2 years ago. He found the pain excruciating intermittently. Examination revealed quadriceps wasting and tenderness over quadriceps insertion. He could straight leg raise against resistance and had no collateral or cruciate instability. Radiographs were normal. MR Imaging demonstrated considerable disruption of soft tissues anterior to patella as well as attenuation and partial injury at insertion of quadriceps tendon and origin of patellar tendon. On exploration, both Quadriceps and patellar tendons were deficient at patella. Quadriceps tendon was split coronally with ruptured superficial portion, while deep portion was split sagitally into two bands. Deep portion was approximated with vicryl and reinforced further with LARS tumour band, suturing with Ethilon. Superficial layer was closed over LARS tumour band. At lower end, LARS tumour band was sutured to distal margins of patellar ligament. After 1 year, he gained full function and grade V power with no instability. He was asymptomatic and returned to pre-injury activities. Simultaneous surgical reconstruction of concomitant deficiencies of quadriceps and patellar tendons using LARS tumour band is effective with excellent clinical and functional results.

Abstract no.: 30051

HEALTH RELATED QUALITY OF LIFE AFTER TOTAL HIP ARTHROPLASTY IN PATIENTS WITH SICKLE CELL DISEASE

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18 Patients with SCD and 2ndry Osteoarthritis of their hips due to Avascular Necrosis underwent uncemented THA. There were 12 male and 6 female patients. Patient had their pre op WOMAC/SF-36/ HOOS /and Oxford hip scores recorded preoperatively as well as 3 month, 6months and one year post op. The outcome scores at one year were significantly better than the pre operative scores However, when compared to a matched cohort of patients (control group) who underwent THA for reasons other than SCD /AVN , e.g. primary OA, post traumatic OA, the womac pain , function, oxford hip score, SF-36 physical , and HOOS scores improvement were less than the control group.

Abstract no.: 30053

**LIMB SALVAGE FOR PATIENTS WITH MALIGNANT TUMOR OR
METASTATIC INVOLVEMENT OF THE MUSCULOSKELETAL SYSTEM**

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Malignant tumor and metastatic involvement of the long bones represent a challenge from both oncological and reconstructive standpoint. The authors report 3 cases of patients with limb malignant tumors: 1. pathological fracture of the mid third of the left humeral diaphysis (fibroblastic osteosarcoma with vascular compound - resection of the entire humerus and reconstruction with a Mutars total humeral modular replacement prosthesis); 2. pathological distal humeral fracture (chondrosarcoma - resection and reconstruction with elbow modular replacement prosthesis); 3. osteosarcoma of the distal femur (resection and reconstruction with uncemented modular knee replacement prosthesis). The study includes 3 patients with bone metastasis. 1. mid differentiated G2 hepatocarcinoma (pathological fracture of the proximal humerus - resection and reconstruction with a proximal humeral modular Mutars prosthesis; 2. malignant melanoma (pathological fracture of the proximal femur - resection and reconstruction with a hip tumoral prosthesis); 3. breast cancer (metastasis of the left distal femur - resection and reconstruction with knee tumoral prosthesis; pathological fracture of the left femoral neck after 1 year - limited resection and reconstruction with bipolar hip prosthesis. The reconstruction procedures were a success and we may also consider the emotional acceptance from the patients as good or satisfactory. We consider that the oncological reconstruction of the bones, completed with an adequate chemotherapeutic treatment, as well as the management of the primary disease represents the premises of short and medium term promising results.

Abstract no.: 30054

**POLYAXIAL VS MONOAXIAL ANGULAR STABILITY IN
OSTEOSYNTHESIS WITH INTERNAL FIXATORS FOR COMPLEX
PERIARTICULAR FRACTURES**

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Plates with angular stability (monoaxial or polyaxial) are competing for indications in periarticular fractures of the long bones, consisting, according to most authors, the ideal treatment at present time. However, the best option for screw locking is controversial and insufficient investigated. The authors present their personal experience regarding angular stability plate osteosynthesis for the fractures of the proximal humerus, distal radius, distal femur, proximal tibia. Results for the treatment with internal fixator plates are superior to the results for classic implants osteosynthesis (mainly in fractures on osteoporotic bones), accounting for construct stability, lack of secondary displacements, early rehabilitation. Polyaxial locked plates has the advantage of screw pathway adjustment (their positioning being adapted to a specific fracture). The large case distribution in different hospital services and good results following this treatment lead to the conclusion that locked plates represent the unique issue in complex periarticular fractures and in osteoporotic fractures. Close cooperation between orthopaedic surgeon, biomechanics and robotics specialist, and the departments of cell biology and pathology will contribute to the creation of the ideal internal fixator.

Abstract no.: 30056

EFFECT OF STELLATE GANGLION BLOCK IN ORTHOPAEDIC CONDITIONS - A STUDY OF 78 PATIENTS

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We have employed infiltration of the stellate ganglion with Lignocaine hydrochloride in approximately 400 cases of painful orthopaedic lesions in time upper extremities, from which we have selected for presentation 18 cases of acute subdeltoid bursitis; 12 cases of periarthritis; 5 cases of myositis and fibrosis; 8 cases of hypertrophic arthritis ; 5 cases of time infectious arthritis; 25 cases of pain and swelling following trauma (fractures, dislocations, and contusions); and 5 cases of causalgia following trauma All patients were infiltrated with descending-infiltration technique of de Sousa Pereira. Hematomata following perforation of an artery or vein occurred in 6 cases, but were of no consequence. Recurrent laryngeal paralysis and phrenic block manifested by transient hoarseness, aphonia, and unilateral paralysis of the diaphragm. The symptoms recede spontaneously. In cases of recent acute lesions of the upper extremity, stellate block affords relief from pain, which is almost universally gratifying. These patients submit to, on even seek out, consecutive blocks. Clinical substantiation is evidenced by time results obtained in acute inflammatory and posttraumatic conditions, in which the major etiological factor is known to be circulatory impairment. In chronic cases, in which the lesions have been present until such anatomical changes as adhesions, erosion of cartilage, or aberrant calcification supervened; it is obvious that only transitory relief from pain can be obtained. Adjunctive physical therapy should be employed in such cases. The range of physical therapy tolerated is in direct proportion to time relief of pain afforded by stellate block.

Abstract no.: 30057

**BONE AUTOGRAPH VERSUS SUBSTITUTE IN TREATMENT OF
COMMUNICATED TIBIAL PLATEAU FRACTURES**

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Purpose: To compare the clinical and radiological results of treatment of comminuted tibial plateau fractures, using internal fixation and bone autograft or substitute. Material and methods: Between 2005 and 2009, 86 patients with closed comminuted tibial plateau fractures (Schatzker types II-VI) were treated by open reduction, osteoplasty with bone autografts in 52 cases (Group I) and bone substitute in 34 cases (Group II) and internal fixation with plates or screws. The mean follow-up was 39 months. Radiological and clinical examinations were performed monthly in the first 6 months and once per year after that. At 6 months postoperatively, weight-bearing radiographs were used to assess the articular surface for eventual collapsing compared to the contralateral plateau. Results: Union was obtained in average at 4 months in the autograft group and at 3,5 months in the bone substitute group. At 6 months after surgery, at radiological examination, the height of the tibial plateau has been maintained in 90,38% in the first group and in 91,17% in the second. In the autograft group, donor site morbidity consisted in 2 hematomas (which healed in time) and persistent pain in 2 cases. Skin necrosis requiring excision and suture was recorded in 3 cases in Group I and in 2 cases in Group II. Conclusions: Bone autograft and bone substitute have similar clinical and radiological results in the treatment of comminuted tibial plateau fractures. The harvesting of the autograft is associated with minimal donorsite morbidity. For implanting the bone substitute, the remaining cavity after reduction must be sealed and the screws must not cross it.

Abstract no.: 30059

**INCIDENCE OF PATELLA BAJA IN TKR PATIENTS IN SAUDI ARABIA
DETERMINED BY TWO METHODS OF MEASUREMENT**

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46 consecutive patients with 73 knees undergoing TKR were recruited in this study. Their knee plain x-rays, lateral view taken in 30 degree of flexion were analyzed for patella and patellar tendon height. We used both measurements, the Insall-Slavati and Blackbourne-Peel ratio. The median for the Insall Salvati method was 0.95 with std deviation of +/-0.195. The median for the Blackburne peel method was 0.78 with std deviation of +/-0.24. Any ratio lower than (Median -1 SD) was considered Patella Baja. Based on above measurement the incidence of patella baja in our study was as follows: Insall Salvati method: 12 Patella Baja cases, 16.4%. Blackburne peel method: 15 Patella Baja cases 20.5%.

Abstract no.: 30062

**SONICATION OF REMOVED ORTHOPEDIC MATERIAL CAN AUGMENT
DIAGNOSIS OF INFECTION**

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BACKGROUND: Infection of prosthetic orthopedic material can be hard to prove and difficult to treat. Recently a new method – Sonication- of removed prosthetic material has been proven as advanced tool for diagnosis of infection. The procedure is simple, sensitive and relatively cheap. **METHODS:** In cases where we were uncertain if the infection was present we removed prosthesis or just a part of it during the operation. Metallic or ceramic parts were sonicated and culture of obtained samples was made. We also obtained tissue swaps and soft tissue biopsies in all patients during the operation. Additional therapy was given if infectious disease was diagnosed. **RESULTS:** We studied 59 cases (55 patients) operated for revision (2 cases of spine surgery, 2 cases of revision foot surgery, 2 cases of revision of tumor prosthesis and 53 cases of revision arthroplasty of hip or knee) during the period from February 2008 to June 2010 treated in our Clinical department for orthopedic surgery. In 2 (3%) cases infection was proven only by soft tissue biopsies (negative sonication), 8 cases (13,5%) were diagnosed by soft tissue biopsies and sonication, additional 14 cases (23,5%) were diagnosed only by sonication of explanted prosthetic material. In 35 cases (60%) all results were negative and no specific therapy was given. **CONCLUSIONS:** We believe that sending retrieved prostheses to sonication aside from making microbiologic cultures of soft tissue biopsies can improve detection of microorganisms. Sonication should be considered in dubious cases, but still only as surrogate method.

Abstract no.: 30066

FUNCTIONAL OUTCOME FOLLOWING OPEN WEDGE HIGH TIBIAL OSTEOTOMY

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32 patients, 24 males, 8 females, undergoing open wedge high tibial osteotomy were involved in this study to assess their functional outcome. Pre operative KOOS scores were recorded, the mean pre op koos score was 28.5. Post op KOOS scores were recorded at 6 months and one year post op, and 2nd year post op. It was found that all patients had a significant improvement in their post op KOOS scores at 6 months (80), and one year, (92), respectively. The increase in KOOS scores beyond the first year was statistically insignificant.

Abstract no.: 30076

LARGE HEADS IMPOSE SIGNIFICANT ALTERATIONS IN THE STRAINS DEVELOPED IN METAL-ON-METAL TOTAL HIPS: A FINITE ELEMENT ANALYSIS

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Metal-on-metal total hip prostheses with large-diameter femoral heads are increasingly being used to treat a number of diseases, particularly among younger and more active patients. However, the theoretical advantages in terms of wear and survival has not, yet, been validated, due to lack of extensive follow-up, and long-term clinical effectiveness of large femoral heads remains unclear. The current study aims to investigate the effects that femoral heads of bigger diameter may impose on the mechanical behavior of the bone – implant assembly. Using data acquired by Computed Tomographies and a Coordinate Measurement Machine, a cadaveric femur and a Profemur-E modular stem were fully digitized, leading to a three dimensional finite element model in ANSYS Workbench. Strains and stresses were then calculated, focusing on areas of clinical interest: the calcar and below the greater trochanter in the proximal femur, the stem tip region and a profile line along linea aspera. The performed FE analysis revealed that the use of large heads produces significant changes in strain development within the bone volume, with respect to the reference model featuring a typical femoral head of 28mm. In the lateral side, along linea aspera and for the stem tip area increasing the head diameter, results in strain rise, while in the calcar area the reverse is observed. Stresses calculated on the modular neck were found increasing with the head diameter, but without reaching the yield strength of the titanium alloy used.

Abstract no.: 30081

ROLE OF 1, 2 INTERCOMPARTMANTAL SUPRARETINACULAR ARTERIAL (1,2 ICSRA) BASED VASCULARIZED BONE GREFT IN THE TREATMENT OF SCAPHOID NONUNIONS

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Fractures of the scaphoid, especially in the proximal pole generally progress to nonunion and pseudoarthrosis. Diminished retrograde blood supply of fractured scaphoid is generally anatomical obstacle for unions, so that scaphoid nonunions can challenge with or without avascular necrosis of the proximal pole. The use of reverse-flow pedicled vascularized bone grafts (VBG) from the dorsal distal radius has multiple advantages in the treatment of nonunions and avascular necrosis of scaphoid. From 2007 to 2010, 26 patients with scaphoid nonunion, proximal pole avascular necrosis were treated with open reduction and internal fixation with K wire in addition to vascularized bone graft based on 1,2 intercompartmental supraretinacular artery (1,2 ICSRA) based vascularized bone graft. All patients had improved grip and range of motion, decreased pain and returned to work. The patient demographics, indications, technique, complications and results of treatment are reviewed and detailed in this study.

Abstract no.: 30087

SEPTIC ARTHRITIS INVOLVING THE SYNCHONDROSIS OF AN OS ACROMIALE

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Os acromiale is an unfused epiphysis of the anterior part of the acromion occurring in approximately 8% of the population. Infection of this joint has not been previously described in the literature. We report such a case in a 59-year-old woman presenting with shoulder. History careful clinical examination including palpation of all the bony landmarks around the shoulder with biochemical blood findings are the initial aids to a diagnosis of septic arthritis of any joint. Imaging whether it be x-rays, ultrasound or MRI, in addition to a joint aspirate add to determining the definitive diagnosis. The principles of treatment of any septic joint remain as adequate drainage, debridement and washout of the joint and administering appropriate antibiotics. In this rare case of septic arthritis involving the synchondrosis of an os acromiale, early adequate imaging with a strong clinical suspicion of a septic joint was paramount to successful diagnosis and treatment. Open irrigation and debridement was indicated due to the anomalous anatomy. Regardless of the mode of treatment undertaken, the key is early detection and aggressive treatment with irrigation and intravenous antibiotics in consultation with the microbiologist, to achieve a favorable outcome and full functional recovery.

Abstract no.: 30090

FLOATING KNEE-TIBIA-TALUS COMPLEX: IPSILATERAL FEMUR FRACTURE, DISLOCATION OF KNEE AND SUBTALAR JOINT CHALLENGING WITH POPLITEAL ARTERY THROMBOSIS

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Knee dislocation is defined as a total loss of the tibiofemoral articulation and generally high-impact traumas are responsible. Subtalar dislocation is the simultaneous dislocation of the distal articulations of the talus at both the talocalcaneal and talonavicular joints. Subtalar dislocations are uncommon injuries, having an incidence of about 1%-2%. The authors report the case of a young patient who suffered ipsilateral dislocation of knee and subtalar dislocation of his foot with femur and talar neck fracture complicating with popliteal artery thrombosis after helicopter crush. These two rare dislocations on the same limb with femur and talus fracture complicating with popliteal artery thrombosis is an extremely rare case.

Abstract no.: 30092

OSTEOGENESIS IMPERFECTA - ZEBRA LINES FROM IV PAMIDRONATE THERAPY

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A 6-year-old male child known to have osteogenesis imperfecta Type IV presented with right leg pain after sustaining a simple fall in the playground. Radiographs taken in the Emergency Department revealed an undisplaced transverse fracture of the mid-shaft of the right tibia, which was treated in a plaster cast and non-weight-bearing (Figure1). The radiographs also show evidence of the zebra stripe sign (Figure1&2) which occur in patients who receive cyclical bisphosphonate therapy for the treatment of low bone mineral density and increased bone fragility. In this case, the child was on 3-monthly cyclical intravenous pamidronate (1mg/kg per dose for 2 days). Dense bone is formed around the time of administration, producing multiple dense opaque linear lines across the metaphyses (Figure1&2). The band intervals between each line are dependent on the age of the patient, the rate of growth and dosing regimen of the bisphosphonate. Pamidronate therapy has been found to increase bone density, cortical width, and reduce fracture rates in patients with osteogenesis imperfect. The child was followed-up closely, and the cast was removed at 3-months post injury. Examination revealed no tenderness over the fracture site, full range of motion in his knee and ankle and he was able to mobilize full weight-bearing. Radiographs taken at 3-months show callus formation with four cortical union around the mid-shaft of the tibia (Figure2).

Abstract no.: 30095

MEDIUM TO LONG TERM RESULTS OF CEMENTED BIPOLAR HEMIARTHROPLASTIES FOR FRACTURE NECK OF FEMUR

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A potential advantage of bipolar hemiarthroplasty is that the movement of the outer metal bearing against the acetabular cartilage may be diminished and cause less wear and provide long term pain relief. However, few studies have reported follow up longer than one year. We present the clinical and radiographic outcome of 46 consecutive cemented bipolar hemiarthroplasties for femoral neck fractures in 45 patients with a median age of 72 years at the time of operation. Median length of follow-up was 5.6years (5 to 8). The mean Harris hip score was 81 (range 53 to 96). 88% of patients were mobile with or without aids with 50% mobile without aid. There was evidence that all patients were affording 2-4mm of clear space between the bipolar head and acetabular weight bearing region. One patient had conversion to total hip arthroplasty (THA) due to pain within six months. One patient has evidence of loosening of a cemented stem at three years with subsequent peri-prosthetic fracture and conversion to THA. There were no revisions for infection, acetabular erosion or dislocation. Twenty-two patients had died by the time of final follow-up with an overall 5 year cumulative survival of 60.2%. Thirty day mortality was 36.8% in patients with an ASA score of 3. We present excellent clinical and radiological medium to long term results with no evidence of acetabular erosion and satisfactory pain relief for the lifetime of the majority of elderly patients. However, careful patient selection is necessary to avoid high early mortality rates.

Abstract no.: 30098

HIP SALVAGE OPTIONS IN FAILED HIP FRACTURE SURGERY

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Introduction: In an aging population incidence of hip fractures is increasing worldwide. This will lead to an increase in the amount of failed fixations and peri-prosthetic fractures presenting to the trauma surgeon. This presents a challenge to the treating surgeon and higher subsequent risk of morbidity and mortality.

Materials and methods: Our Study looked at Primary Hip Salvage Surgery: or Failed Fracture Fixation Surgery. Retrospective review of outpatient notes/x-rays/clinic letters from November 2006 to May 2010. 27 Patients were referred for further opinion relating to failure of fixation, AVN, Infection or non-union around the hip joint. Including Failed (AO screws DHS, DCS, IMHS hemi-arthroplasty)

Results: 12 patients achieved satisfactory outcome; and were not readmitted to Worcester with further complications. 9 patients were known not to have been able to return to pre-injury level of activities. 6 patients known deceased. 6 mortalities in total Range from 3 days to 15 month survival following salvage procedure. Average survival for this group was 6 months. Overall 3 year mortality rate for our small series is 6/27 or 22.3%. All were re-operated at some stage following primary surgery. Higher complications were noted in sub-trochanteric fractures treated with IMHS and where the Austin Moore prosthesis was used in intracapsular fractures.

Conclusion: Not all patients die after hip fracture surgery and its complications. This highlights the importance of selection of appropriate implants in hip fracture surgery in the first instance. Overall, salvage surgery of in carefully selected patients can provide patients with good to excellent results.

Abstract no.: 30101

SPONDYLOLISTHESIS, SACRO-PELVIC MORPHOLOGY AND ORIENTATION IN YOUNG GYMNASTS

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Introduction: Sacro-pelvic morphology and orientation in gymnasts and their relationship with spondylolisthesis have never been analyzed. The purpose of this study was therefore to evaluate the prevalence of spondylolisthesis in a cohort of gymnasts, as well as the associated demographic characteristics and sacro-pelvic morphology and orientation.

Methods: Radiological evaluation of 92 gymnasts was performed to identify spondylolisthesis, and to measure pelvic incidence, pelvic tilt, sacral slope and sacral table angle. Different demographic and training characteristics were evaluated. Radiographic parameters were compared with reference values published for asymptomatic children and adolescents, and for subjects with spondylolisthesis. **Results:** A 6.5 % prevalence of spondylolisthesis was found in our cohort. The weekly training schedule was the only statistically significant variable measured between the subjects with and without spondylolisthesis. Pelvic incidence, pelvic tilt, sacral slope and sacral table angle were respectively $69 \pm 20^\circ$, $15 \pm 13^\circ$, $54 \pm 11^\circ$ and $88 \pm 7^\circ$ in gymnasts with spondylolisthesis, and $53 \pm 11^\circ$, $10 \pm 6^\circ$, $43 \pm 9^\circ$ and $94 \pm 6^\circ$ in gymnasts without spondylolisthesis. When compared to asymptomatic individuals, pelvic incidence and pelvic tilt were slightly increased in gymnasts without spondylolisthesis. Pelvic incidence, sacral slope and sacral table angle were significantly different between gymnasts with and without spondylolisthesis.

Conclusion: Prevalence of spondylolisthesis in young gymnasts was similar to that observed in the general population. Sagittal sacropelvic morphology and orientation was abnormal in gymnasts with spondylolisthesis, and was also slightly different in gymnasts without spondylolisthesis when compared to the normal population. The present study supports an association between spondylolisthesis and abnormal sacro-pelvic orientation and morphology.

Abstract no.: 30103

CEMENT ANAPHYLAXIS DURING TOTAL HIP REPLACEMENT AFTER UNCOMPLICATED PRIOR EXPOSURE

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Methyl methacrylate toxicity is a major cause of haemodynamic instability and contributes to intraoperative mortality of 0.02% to 6.6% during cemented total hip arthroplasty. Anaphylaxis during anaesthesia is rare, 1 in 4000 to 25,000. We are reporting anaphylaxis to cement or a component due to sensitisation during uneventful contralateral total hip replacement under general anaesthesia. A 78-year old woman with no significant comorbidities, allergies or allergic diathesis underwent left total hip replacement under general anaesthesia. After acetabular cementation, she became hypotensive, tachycardic and developed swelling of eyelids, face, lips, tongue and larynx besides generalised maculopapular rash. Chlorphenaramine maleate and hydrocortisone were given intravenously. Hypotension did not respond to fluids, ephedrine and phenylephrine, but corrected with nor-adrenalin infusion. In consultation with anaesthetist, we proceeded to cement femoral component avoiding pressurization. Tryptase was raised at 33 µg/l (normal<15 g l). After initial stormy period she made an uneventful recovery. Toxic effects of cement usually manifest during pressurisation of femoral component. In our patient, hypotension and rash over face were noticed on acetabular cementation. Hypotension, laryngeal oedema, swelling of face, lips and tongue with generalised rash suggested a hypersensitivity reaction. The only immediate test is mast cell Tryptase, which is elevated transiently and missed unless blood is taken at its peak in about an hour. Our patient developed anaphylaxis to cement or component due to prior sensitisation and Ig-E type antibody complexes. Orthopaedic surgeons and anaesthetists should be vigilant to potential risk of allergic reaction to cement even after uncomplicated exposure.

Abstract no.: 30104

REPORT OF AN ATYPICAL SPRENGEL DEFORMITY WITH TWO OS OMOVERTEBRALE

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Background: Sprengel deformity is a rare abnormality but the most common congenital deformity of the shoulder. **Case:** We report about a case of a 14y old boy with a Sprengel deformity of the left shoulder without other congenital abnormality. He complained about cosmetic problems due to the paravertebral bump at the neck and problems during swimming. During the operation we found an os omovertebrale of about 6cm connecting the medial margin with the upper thoracic spine. We found another os omovertebrale at this typical location connecting the scapula with the midcervical spine. After resection of this second abnormal bone, the prominent superior margin and angle were trimmed and the scapula moved downward to a more physiologic position at the thorax. Postoperative radiographs demonstrate a remarkable downward correction of the position of the scapula and a good cosmetical result. **Conclusion:** This abstract illustrates a single case of an atypical Sprengel deformity with two bony bars connecting the scapula to the cervical and thoracic spine, which has not been described before. Mooney et al. (JPO 2009) described an atypical Sprengel deformity with a bony connection of the medial margin of the scapula to the clavicle and occipital region. In order to establish the prerequisites for an improved shoulder function the bony or fibrous connections between the scapula and the spine need to be removed, the scapula brought in a physiological position and the detached muscles need to be reinserted in a corrective way to allow stabilization of the scapula.

Abstract no.: 30110

INERTIAL SENSOR BASED GAIT ANALYSIS IN PATIENTS WITH GONARTHROSIS AND COXARTHROSIS

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As walking is a basic requirement for many daily activities, gait analysis provides important information on the functional capacity. A single inertial sensor positioned at the sacrum was used for routine clinical assessment of relevant spatiotemporal and kinematic gait parameters during 20 meters indoor walking. Patients with osteoarthritis (n=20, m/f=8/12, age=64.2 ±10.0yrs, BMI=28.1 ±5.5) scheduled for total hip replacement (THR, n=10) or total knee replacement (TKR, n=10) were compared to an age and gender matched healthy control group (n=20, m/f=8/12, age=62.5 ±5.4yrs, BMI=26.3 ±3.1). Gait parameters were derived by algorithm (Matlab) based signal analysis. WOMAC function subscores were obtained in patients. The diagnostic power of gait parameters to distinguish patients from controls was calculated using the ROC curve in which the area under the curve (AUC) summarizes the tradeoff between sensitivity and specificity (best score is 1.0). The spatiotemporal gait parameters showed good discriminate capacity (AUC range: 0.73 - 0.87) between patients and controls. Patients walked with a lower frontal plane motion (pelvic obliquity) than healthy controls ($6.3^\circ \pm 1.76$ vs. $7.8^\circ \pm 2.84$ resp. $p<0.05$) and different motion patterns of pelvic obliquity between patients with gonarthrosis and coxarthrosis were objectively quantified. Gait parameters showed weak correlations (Pearson's r up to 0.16) with WOMAC function subscores, suggesting that the self-reported functional status does not reflect objective physical performance such as gait speed. Conclusion: Inertial sensor based gait analysis can provide clinically relevant gait parameters, allows routine clinical assessment of function in osteoarthritis and complements conventional scoring systems.

Abstract no.: 30116

PROXIMAL HUMERAL OSTEOMYELITIS AND SEPTIC ARTHRITIS OF THE SHOULDER IN A 2-YEAR-OLD CHILD: CASE REPORT WITH 5 YEARS FOLLOW-UP

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The authors present the case of a two-year-old boy with a septic arthritis of the shoulder and osteomyelitis of the proximal humerus with a three weeks delay in diagnosis. The case presented initially as an isolated shoulder pain with no radiographic abnormality. Sistemic or local signs were absent for more than two weeks. Diagnosis was made with the onset of local inflammatory signs after a three weeks evolution of shoulder pain with the X-Rays showing a small lytic lesion in the proximal humerus. Surgical treatment consisting of a shoulder arthrotomy by a deltopectoral approach was performed and a suction-irrigation system was used. Diagnosis was confirmed by the isolation of *Staphylococcus Aureus* from the joint fluid and appropriate antibiotics were used for eight weeks. With a five-year follow-up, clinical and radiological evolution has been favourable with a slight limitation on shoulder mobility and humeral shortening.

Abstract no.: 30121

CLINICAL AND RADIOLOGICAL OUTCOME OF DISTAL RADIAL FRACTURE FIXATION USING VOLAR PLATES

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Background The distal radius is commonly fractured with an annual fracture incidence in the UK of about 9-37 in 10,000. Restoration of normal anatomy is an important factor that dictates functional outcome. **Objective:** To study the clinical and radiological outcome of distal radial fracture fixation using volar plates. **Methods:** Thirty-seven patients with distal radius fractures undergoing open reduction and internal fixation using volar plates were included. Tilt of the fractured distal radial fragment was recorded from initial radiograph and classification of fractures was done using the Orthopaedic Trauma Association system. The QuickDASH questionnaire was used for evaluation of symptomatic and functional outcome six months to one year after surgery. The radiological outcome was assessed using measurements of radial inclination, ulnar variance and volar tilt. **Results:** Of the thirty-seven patients, 13 were male and 24 were female. The mean age was 55.6 years (range 18-87 years). According to the AO classification, there were 8 cases each of C2 and C3 fractures, 6 cases of C1 fractures and 3 cases each of class A2, A3, B1 and B3 fractures. There were 2 patients with class B2 fracture. Average restoration of volar tilt was 6.47 degrees (range -12.4 to 20.3 degrees). Mean restoration of radial inclination was 23 degrees (range 12.5 to 30.0 degrees). Ulnar variance on average was 0.09 mm (range -5.0-6.7mm). The mean QuickDASH score was 9.8. **Conclusion:** Fixation of displaced intra- and extra-articular distal radial fractures is achieved satisfactorily with restoration of normal anatomy and function using volar plates.

Abstract no.: 30123

A CASE OF FAMILIAL MEDITERRANEAN FEVER FMF - A CHALLENGE FOR THE TEAMWORK OF RHEUMATOLOGISTS AND ORTHOPEDICS

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The 25 year old patient presented an acute arthritis of the left knee and an osteoarthritis of the right shoulder at the first visit. He was underweight, the BMI was 16,6. The abdominal ultrasound showed a splenomegaly. Laboratory data showed signs of inflammation and anemia. The result of the synovial analysis from the left knee was 177 leucocytes, mostly neutrophils, no bacteria and crystals. There was no history of abdominal pain except in the childhood, but recurring joint inflammations. The patient was an immigrant from Armenia. In order to this findings MEFV gene analysis was performed and this confirmed the diagnosis of FMF with a homozygous mutation of M694V. A therapy with colchicine and diclofenac has been started, but a local glucocorticoid therapy was necessary from time to time. Three years later the patient suffered from arthritis of the right hip, which rapidly was followed by osteonecrosis leading to THR. In the same year the left knee had to be replaced due to secondary osteoarthritis. One year later the disease switched to the right knee where synovectomy followed by synoviorthesis was performed. The patient seemed to recover, gained weight and made progress in mobilization but still his right knee needed local glucocorticoid therapy from time to time. Finally the decision to change the medication had to be done and the patient got Anakinra, which led to remission until now but the dosage had to be lowered due to neutropenia. He is still in remission at the moment.

Abstract no.: 30126

MID-TERM (2002-2009) RESULTS OF TOTAL HIP REPLACEMENT IN ONE HOSPITAL: DIFFERENCE BETWEEN HOSPITAL'S DATA AND ESTONIAN HEALTH INSURANCE FUND'S DATA

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Aim: Aim of the study is to analyze the difference of data between West-Tallinn Central Hospital (WTCH) and Estonian Health Insurance Fund (EHIF) and subsequently update it.

Material and method: A local hospital database was established in 2002 at the Orthopedics Department of WTCH. Each primary hip replacement or revision procedure was recorded. 845 primary total hip arthroplasty operation were performed, 560 of them were women (66.3%) and 285 were men (33.7%). Revision operations were made in 21 cases (revision burden 2.4%). The reasons for revision were aseptic loosening 9 cases (43%), infection 5 cases (24%), dislocation 4 cases (19%), implant failure 1 case (5%) and 2 cases for other reasons (10%). **Results:** During this period 21 revisions were recorded in WTCH database, while 30 revisions were registered at EHIF database (9 revisions were made by other hospital). The reason for revision according to EHIF database was aseptic loosening 11 cases (37%), infection 12 cases (40%), dislocation 4 cases (13%), implant failure 1 case (3%) and 2 cases for other reasons (7%). Overall revision rate is 1.4 times higher according to EHIF's data. Using the Kaplan-Meier survival analysis the 2 year implant survival rate differs 98.6 (data from WTCH) to 97.7 (data from EHIF). **Conclusions:** The implant survival rate differs between WTCH's and EHIF's data (98.6 – 97.7). The overall revision rate is 1.4 time higher according to EHIF's data. If there is a need for survival analyses, it is impossible to do it without national register.

Abstract no.: 30133

RADIOLOGIC EVALUATION OF THE FEMORAL TUNNEL ENTRANCE AREA FOR CONFLICT PRIOR TO ANTERIOR CRUCIATE LIGAMENT REVISION SURGERY – A COMPARISON OF THREE-DIMENSIONAL COMPUTED TOMOGRAPHY WITH CONVENTIONAL RADIOGRAPHS AND TWO-DIMENSIONAL COMPUTED TOMOGRAPHY

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INTRODUCTION: Anterior cruciate ligament (ACL) revision surgery may occur in up to 25%. Factors of failure may be identical to primary surgery such as wrong positioning of the tunnels, traumatic re rupture, and co-injuries. An additional problem is coincident tunnels mainly in the femur, demanding autologous bone grafting and two stage surgery. Conventional radiographs (CR) and computed tomographies (CT) are performed to evaluate positioning of the tunnel pre-operatively. **HYPOTHESIS:** CR and CT may be able to show incorrect tunnel positioning. However, none depicts potential conflict of the pre-existing and the desired tunnel in revision surgery, contrary to 3D-CT. **METHODS:** 20 patients with primary ACL reconstruction served as reference group to define our desired femoral tunnel positioning. Measurements were performed on CR and CT with previously published methods. The femoral tunnel entrance area (FTEA) was measured on 3D-CT using a three-dimensional coordinate system based on surgical landmarks. Identical measurements on 20 patients requiring ACL revision surgery were performed and than compared with the reference group to predict conflict. Arthroscopic finding served as goldstandard. **RESULTS:** Comparing the desired femoral tunnel positioning on CR and CT of the reference group and the pre-existing tunnel positioning of patients requiring ACL revision surgery, showed conflicting results in 1 out of 2 patients. Comparing the desired FTEA with the pre-existing FTEA showed correctness in every single case as found during arthroscopy. **CONCLUSION:** 3D-CT is the only imaging modality to predict conflict of the femoral tunnels in ACL revision surgery and is therefore strongly recommended.

Abstract no.: 30134

TOTAL HIP REPLACEMENT WITH CERAMIC-CERAMIC INTERFACE - A 5 YEARS REVIEW

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The authors conducted a review of all total hip arthroplasties with ceramic tribology performed from 01 July 2002 to June 30, 2007. The review was based on information from the patient's medical files, and a follow-up visit. From a total of 37 patients who meet the criteria of the study, 32 patients were seen in outpatient follow-up, representing 42 hips with ceramic-ceramic interface. 71.9% of patients are male. 47.3% of the patients were in their 5th decade of life at the time of surgery. The most common surgical indications were primary hip osteoarthritis and avascular necrosis of the femoral head. Mean follow-up of 26.9 months. 85.7% of patients had Harris score of less than 90, corresponding qualitatively to a result "excellent". One patient received a score below 70. The average Harris score was 91 points. The subjective assessment of patients was favorable, with 95.2% satisfied or very satisfied. All patients reported that if they could decide again, would choose to be operated. 80.1% returned to the same employment. In the radiological evaluation there were no cases of osteolysis detected. One patient underwent revision of the acetabular and femoral head because the ceramic head fractured after 3 years. Two patients reported a squeaking hip. No complications were reported except for one case of prolonged drainage of one wound. The average hospital stay was 8.4 days. Our series is similar to those in the literature, although some studies have an average Harris Hip Score of 97; that we could not achieve.

Abstract no.: 30136

POTENTIALLY FATAL GLUTEAL COMPARTMENT SYNDROME FOLLOWING VASCULAR AND NEUROLOGICAL INJURIES: A CASE SERIES

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Compartment syndrome in the gluteal region is a serious condition that can be overlooked. We report a case series of 3 potentially fatal cases buttock compartment syndrome following vascular and neurological injuries, which to our knowledge has not been reported before. In one case, a massive bleeding due to injury to the superior gluteal artery caused the compartment syndrome. The cut vessel was hidden inside the pelvis deep to the greater sciatic notch. The tight compartment was the limiting factor for the continued bleeding and worked as tamponad. On the other hand the fasciotomy and release of the compartment which is the standard treatment had a serious side effect of de-tamponading the compartment and loss of hemostasis. The control of the bleeding by a vascular surgeon has helped the patient to survive. The other 2 cases happened in one patient following a head injury with neurological deficit. This led to the occurrence of compartments syndrome in six large compartments (both buttocks, both thighs, both legs) and resulted in massive rhabdomyolysis and crush syndrome which again was life threatening. The early detection of one compartment syndrome in this patient and the close observation led to the discovery of compartment syndrome in the other five regions. The prompt release and fasciotomy helped the patient to survive such a catastrophe. A high index of suspicion is needed to early diagnose this condition and attention should be paid for the possible serious complications and difficult management of such condition.

Abstract no.: 30146

MINIMAL BLOOD LOSS FOLLOWING PRIMARY TOTAL HIP ARTHROPLASTY BY USING MINIMALLY INVASIVE TECHNIQUE

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Aim: To find out the amount of blood loss, haemoglobin drop and number of blood transfusions following Primary Total Hip Arthroplasty by using minimally invasive technique. Material and methods: This retrospective study done between June 2006 and June 2010 included patients who underwent Primary Total Hip Arthroplasty for Primary osteoarthritis of hip. This was minimally invasive technique done by single Senior Surgeon. In total 96 patients were included in this study. Males were 35 and Females were 61. Age ranged between 49-94 years, average age was 73 years. Average length of the skin incision was 7cm. 84 patients had cemented hips and 11 had uncemented hips and one had Hybrid hip Arthroplasty. Observations: Average pre operative haemoglobin was 13.1 grams/dl and average post op HB was 10.6 grams/dl. Average drop of haemoglobin was 2.5 grams/dl. Only 5% of patients received blood transfusion. Conclusions: There was significant reduction in blood loss and rate of blood transfusions.

Abstract no.: 30147

LONG-TERM RESULTS OF SILASTIC HINGED ARTHROPLASTY FOR FIRST META-TARSOPHALANGEAL ARTHRITIS

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Aim: A retrospective analysis of the 5-14 year results of the Silastic hinged arthroplasty for Hallux Rigidus (1997-2006). Methods and Materials: The clinical and radiological findings of the consecutive patients who underwent the silastic hinged arthroplasty for Hallux rigidus at our Institute were reviewed. Minimal follow-up duration was 5 years. Scoring was done using the AOFAS scoring system. Results: 39 Males : 96 Females. Average age: 60 years. 8 deceased prior to review. One patient developed loosening with synovitis needing revision to successful arthrodesis. All but 4 patients had either fair/good/excellent results. Discussion: The main operative modalities of treatment for Hallux Rigidus are arthrodesis and arthroplasty. Concerns have been raised about loosening and synovitis with regards to silastic implants. Conclusion: Silastic hinged arthroplasty gives an effective operative option for this disabling condition.

Abstract no.: 30150

**PAN-DIAPHYSEAL OSTEOMYELITIS OF THE TIBIA IN A PATIENT WITH
MYELOMENINGOCELE**

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The authors present a 10 years old male, with a history of spina bifida and myelomeningocele. Motor and sensory level at L3. Ability to ambulate with crutches and orthoses. In 09/2008, direct trauma of the right knee. After three days started swelling and knee pain. Normal x-Ray, medicated with flucloxacillin. Persistent edema with new knee pain and inability to walk after knee sprain. Four days later had swelling of the entire limb. The x-Ray revealed image suggestive of chronic osteomyelitis of the tibia. Analytically: no leukocytosis, and CRP-80mm VS-63, 9 mg / L. Hospitalized, began ceftriaxone and clindamycin ev. Attempted aspiration of a 2 cm collection adjacent to the internal collateral ligament, guided by ultrasound, without success. Bone scintigraphy (02/10/2008) "marked and diffuse hiperfixation in the right tibia, which is thickened (...) compatible with focal pathology in the acute phase (osteomyelitis)" MRI (06/10/2008)" Marked changes in the tibia, muscle and other soft tissues, suggesting inflammatory phenomena. It is notable detachment of the proximal tibial epiphysis, with interposition of fluid in the metaphysis (...) marked periosteal reaction of the lower half of the tibia. Without apparent intraosseous abscesses (...)" Remained afebrile, improving clinical, analytical imaging in hospital. Discharged after 38 days (36 days of antibiotic ev). Prescribed cefuroxime (4 weeks per os). No weight bearing allowed. Partial load in 12/2008, when the CRP and ESR normalized. Since 04/2009 walking with crutches and orthoses. In 06/2009 analytically well, without signs of inflammation. Epiphysiodesis proximal tibia, with slight varus deformity.

Abstract no.: 30155

SUBACROMIAL LIPOMA CAUSING IMPINGEMENT SYNDROME OF THE SHOULDER: A RARE CASE REPORT

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Case Report: The 48-year-old male patient presented to our clinic in June 2010 with a 6-year history of intermittent soreness around the left shoulder, which was diagnosed as bursitis and treated intermittently with physiotherapy. Three months before his appointment, after some exercise on a climbing wall, he had a sudden onset of pain and stiffness in this shoulder. On examination, the shoulder ROM was limited with abduction up to 90 degrees and some palpable crepitus on flexion and abduction. Hawkin and Neer tests were positive for impingement. MRI scan revealed a 5 x 5.7 x 3 cm benign lipoma extending anteriorly, deep to the anterior fibres of the deltoid. No other significant pathology was identified. His lipoma was excised with difficulty, using a combination of arthroscopic and open manoeuvres: The anterior superficial part was excised under direct vision and the remainder of the lipoma, located in the sub acromial space, was removed using a combination of diathermy and debridement with a soft tissue shaver. He made an uneventful recovery and was discharged from our care having his DASH score improved from 23.7 to 5.4 post-operatively. **Discussion:** Impingement syndrome is usually caused by encroachment of the rotator cuff by the acromion, coracoacromial ligament, acromioclavicular joint, or coracoid process. Rare causes reported comprise coracoid impingement, synovial chondromatosis and tumors. This is only the second case of subacromial lipoma causing impingement syndrome of the shoulder in the bibliography and the first one to be excised with the means of endoscopic and open procedure.

Abstract no.: 30160

MANUAL REDUCTION OF SACROCOCCYGEAL DISLOCATION UNDER GENERAL ANESTHETICS – CASE REPORT

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A sacrococcygeal dislocation is a rare occurrence, and the treatment options vary. Initial treatment is nonoperative, consisting of a manual reduction with a gloved finger and local rest. Acute operative treatment of a failed closed reduction is unusual. There are reports of surgical treatments with tension band sutures and percutaneous pinning, but the risk of local infection is high. The authors present the case of a 40 years old female that suffered a fall onto her buttock while walking down a set of stairs. On examination, a step was felt in the continuity of sacrum and coccyx. The tip of the coccyx was not palpable. Per rectal examination revealed a small bump on running the finger along the sacrococcygeal curvature. On plain radiographs of sacro coccygeal region, lateral view revealed anterior dislocation of the coccyx over the sacrum. An attempt to reduce the dislocation was made in the emergency room, but the patient could not tolerate the pain. She was given general anesthesia and a second manual reduction was tried. The maneuver was partially successful since the angle between the sacrum and the coccyx became wider, and more anatomical. No further attempts were made. The patient remained in the hospital until she had bowel movements, and was instructed not to sit during the first 6 weeks, and to sleep in prone position or lateral decubitus during 3 weeks. The postoperative partial reduction was maintained and she reported no pain during intercourse or bowel movements.

Abstract no.: 30164

**SCREW-HOME MECHANISM: COMPARISON BETWEEN
OSTEOARTHRITIC AND TKR PATIENTS: PROOF OF CONCEPT**

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Screw-home mechanism is the name given to the action when a knee reaches to full extension and just as the knee locks into hyperextension it rotates in an outward direction just a few degrees. This has the effect of putting most of the weight onto the cartilage, menisci, and bones while giving a rest to the muscles of the thigh and calf. What allows for this is that the medial femoral condyle is slightly curved and the medial condylar notch is slightly longer than the lateral condylar notch. The ACL and to some extent the PCL are important in guiding this movement of the bones. Osteoarthritic patient mostly can't gain the full extension and quadriceps muscle is usually weaker than normal which is important in screw home mechanism. Total knee replacement (TKR) disturbs the screw home mechanism due to loss of ACL, same size of both condyles and weak quadriceps. The plane of the study is to compare the screw home mechanism in O.A. and TKR patients then comparing the gained data with the normal knee locking mechanism. 15 patients with OA and 15 unilateral TKR patients aged between 55 and 65 years without any factors that may affect gait. Laboratory gait analysis for TKR will be done 3 months post operatively. 3D motion analysis system with a minimum of two different views to determine the motion of the body joints in the three plans at the same time to be used for the analysis.

Abstract no.: 30165

NEGLECTED BILATERAL FRACTURE NECK OF FEMUR (NOF): A CASE SERIES

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We report 4 patients with 8 neglected fractures of NoF due to different causes from what were reported before. A 25-year old gentleman had bilateral fracture NoF when he fell from a donkey, neglected for 1 year and then had bilateral hip fusion. At age of 52 he had conversion to bilateral arthroplasty. A 60-year old man diabetic fell awkwardly from toilet seat into floor with legs crossed. He had bilateral fracture NoF, neglected for one year partly due to pressure sores, then had bilateral bipolar hemiarthroplasty but died 3 months postoperatively. A 60-year old man known to have severe bilateral knee osteoarthritis (OA). He presented in a wheel chair with pain in left hip one and half months ago following a fall. Then pain in the right hip started following a possible twisting injury 2 weeks ago. He was found to have bilateral fracture NoF but he refused surgery. A 60-year old lady presented in a wheel chair with left hip pain started few days ago. She wasn't able to walk since a fall 1 month ago. She was found to have metastatic bone disease with unknown primary which caused left NoF fracture and avulsion fracture with pathological changes in the right NoF impending a fracture. She rejected surgery, thus referred to an oncologist. This is a unique collection of 8 cases of fracture NoF who had a poor prognosis. All patients had low socioeconomic status with tendency to reject surgical management either by the patient and /or family.

Abstract no.: 30167

THREE DIFFERENT RARE TUMOURS OF THE HIP TREATED WITH SURGICAL EXCISION USING THE GANZ APPROACH

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This case series highlights the use of the Ganz approach (trochanteric slide approach) and surgical dislocation for excision of fibrous dysplasia of the femoral neck, pigmented villonodular synovitis and synovial chondromatosis of the hip. We demonstrate it is possible to obtain excellent exposure of the femoral neck, head and acetabulum allowing unparalleled access to the femoral neck and acetabulum to surgically treat these three tumours. At final follow-up the patients had no recurrence and returned to normal activities of daily living. The Ganz approach allows safe dislocation of the hip joint without the risk of osteonecrosis of the femoral head. At present the Ganz approach has been reported for use with femoral acetabular impingement surgery in revision total hip arthroplasty and Pipkin IV fractures of the acetabulum. The approach has a relatively small post-operative morbidity allowing it to be used so widely. Arthroscopic surgical treatment of synovial chondromatosis has been described in the literature but is technically very demanding. It may not allow the surgeon to visualise the entire acetabulum. However, the Ganz approach provides excellent direct visualisation of the femoral head and acetabulum allowing any tumour around the ligamentum teres to be easily identified and excised. In conclusion this case series highlights the use of a Ganz approach with surgical dislocation of the hip to provide excellent exposure of the tumours of the femoral neck, head and acetabulum. The surgeon can thus be reassured that complete excision of the tumour has occurred.

Abstract no.: 30172

WHICH TECHNIQUE IS BETTER FOR TKA; CUSTOM-MADE CUTTING GUIDES, NAVIGATION OR CONVENTIONAL?

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Recently, a new technique of custom-made cutting guides for TKA is introduced to clinical practice. The author was the first to report the novel technique of patient-specific templating for TKA, using CT-based preoperative planning to produce 2 cutting guides replacing conventional instrumentation. Now the technique is released to clinical practice. However, no published data yet on the comparison between this new technique against both navigation and conventional techniques. The author prospectively compared between custom-made cutting guides, navigation and conventional techniques. A total number of 60 cases were included in this study with 20 consecutive cases for each technique. The alignment in all cases was within 3 degrees of errors with no statistically significant difference between all techniques. No complications on short term follow up. The conventional technique had the advantage of being the default technique that all staff involved in the surgical procedure was familiar with. Navigational technique had accurate and comprehensive documentation of intraoperative details and measurements. This clinical study showed the superiority of custom-made cutting guides over conventional instrumentation. It eliminated medullary guides, reduced operative time, and provided better accuracy. It was a simple, less expensive technique with no need for registration or tracking, thus it was better than navigation for TKA. The technique was used in straightforward TKA and in complex cases of extra-articular deformities and unfit patients such as haemophilia, cases with previous history of DVT and Pulmonary embolism.

Abstract no.: 30174

IRREPARABLE ROTATOR CUFF TEARS REPAIRED WITH A GRAFT JACKET®

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We present the case of a 50-year-old lady who suffered a massive rotator cuff tear that was previously thought irreparable. The patient was treated with a graft jacket to augment the repair. A graft jacket is composed of donated cadaveric human skin, which is treated to create an allograft. This is used as a framework to support cellular repopulation and vascularisation. The operation was an arthroscopic procedure that followed standard rotator cuff repair operations but the graft jacket was used to lengthen the remaining tendon to attach to the footprint. Her post-operative range of movement was full flexion, elevation, internal rotation to the buttock level and 30 degrees of external rotation. This operation has resulted in a fantastic result and we hope to encourage use of the graft jacket to help patients with massive rotator cuff tears.

Abstract no.: 30176

A MORPHOLOGICAL STUDY OF PROXIMAL FEMUR

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In internal fixation for trochanteric fractures, although a femoral head fixating device (e.g. screw or blade; HFD) should be instated at the center of the femoral head and neck, it is not always possible. We hypothesized that the femoral shaft axis and femoral neck axis do not always meet. The purpose of this study is to evaluate the anatomical characteristics of proximal femur in order to determine whether the optimal inserting the HDF is always possible. Twenty healthy subjects were taken their hip CT and 3D images were reconstructed. Cross-sectional image of the plane passing the femoral neck axis and perpendicular to the frontal plane were obtained and the center of the femoral head (HC), the center of the femoral neck (NC), and the center of the femoral shaft (SC) were identified, and the respective positional relationships were studied. In most of the cases, the HC, NC, and SC did not form a straight line, and a mean angle of 12° was observed between the line connecting the HC and NC and the line connecting the NC and SC. Moreover, the line connecting the SC and the NC was positioned anteriorly from the center of the bone head by approximately 10% of the width of the bone head. The results indicate that the HFD may deviate from the center in either the neck region or the femoral head. It is necessary to determine the optimal insertion route for each case.

Abstract no.: 30177

INDICATIONS AND RESULTS OF HIP RESURFACING, A FOLLOW-UP OF SEVEN YEARS

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As an alternative in total hip replacement the so called resurfacing arthroplasty of the hip is gaining wider acceptance. Hip resurfacing arthroplasty is claimed to allow higher activity levels and to give better quality of life than total hip arthroplasty. The best indication for this prosthesis is a young active patient with severe hip arthritis, good hip morphology and reasonable bone quality. Between September 2005 and December 2010, 95 hip resurfacing devices were implanted by a two surgeons in ninety one patients. The mean age of the patients was 52 years, and fifty patients were male. Primary osteoarthritis was the etiology for sixty-four hips. All patients were assessed clinically and radiographically. To date 4 hips have been revised (4.2%). The cause for revision was a fracture of the neck of the femur/ avascular necrosis (1 hip), followed by loosening of the acetabular component (1 hip), infection (1 hip). In one case the cause of failure was unknown. These five-year results in the study's group are satisfactory. Resurfacing hip arthroplasty with the presented implant provides a durable standard for all young patients requiring hip joint replacement. Larger diameter heads have contributed to lower dislocation rates and large-diameter metal-on-metal articulation can provide close anatomic restoration in primary THA. On the basis of the current evidence base, RA surgery may have better functional outcomes than total hip arthroplasty, but the increased risks of avascular necrosis, neck fracture and revision surgery following hip resurfacing indicate that THA is superior in terms of implant survival.

Abstract no.: 30178

BIOMECHANICAL PROPERTIES OF A CONSTRUCT WITH A TRANSVERSE FRACTURE IN A COMPOSITE FEMUR BONE INSERTED WITH RETROGRADE FLEXIBLE NAILS AND ITS RELATIONSHIP TO THE MAXIMUM CURVE OF THE FLEXIBLE NAIL - A BIOMECHANICAL LABORATORY STUDY

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Aim: To compare the femur fracture with the maximum curve of a flexible nail and its possible biomechanical stability. Materials and method: Three sets of femurs with fractures at the level of the maximum curve, 2.5 cms below the maximum curve and 2.5 cms above the maximum curve were taken. Two 4.0mm flexible nails were inserted in each bone and tested with four-point testing anteroposterior and lateral planes according to ATSM (American Society for Testing and Materials) guidelines on an Instron 3367 and 30KN load cell running on a blue hill soft wear. Rotational testing was done using a rig constructed with fixing the distal end of the femur in Wood's metal and attaching a metal plate at the proximal end and rotational stability checked using an inclinometer. Results: Results were tabulated on excell and mean, S deviation and standard error of mean calculated. Standard Deviation in group A with the maximum curve of the nail corresponding to the level of the fracture was 60.67, group B below the level of the fracture was 66.66 and group C with fracture above the level was 67.8. Conclusion: No statistical significant difference was present between the three test groups. We suggest atleast 3 cortical distance of the nail should be inserted beyond the fracture. Rotational stability given by the nails is minimal and therefore in a clinical setting in paediatric fractures other modes of immobilisation of the fresh fractures like hip spica should be undertaken to prevent rotational deformity.

Abstract no.: 30179

**SLEEVE FRACTURE OF UPPER TIBIAL METAPHYSIS IN ADOLESCENTS
- DIAGNOSIS AND MANAGEMENT OF THIS UNUSUAL FRACTURE
PATTERN**

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Sleeve fracture of the upper tibial metaphysis with patellar tendon avulsion is an extremely rare entity. We present a case of sleeve fracture of tibia in a 14 year old boy. Classical radiographic appearance of small avulsed subchondral bone with patella alta was very much suggestive of the diagnosis. However, a sleeve fracture of the inferior pole of patella may also have a similar radiographic appearance. The detection of the fragment in the radiographs depends upon the amount of bony fragments avulsed. It may be predominantly cartilaginous and can escape detection. Moreover, an undisplaced sleeve fractures with intact extensor mechanism may complicate matters. A high index of suspicion is necessary and further investigation in the form of magnetic resonance imaging helps to confirm the diagnosis. Treatment consists of open reduction and internal fixation with screws, simple sutures or anchor sutures based on the size of osteochondral fragment.

Abstract no.: 30181

**JOINT LINE RESTORATION IN TOTAL KNEE ARTHROPLASTY
PERFORMED WITH THE LIGAMENT BALANCING TECHNIQUE: A STUDY
OF 84 CONSECUTIVE KNEE REPLACEMENTS**

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Objective: To assess the accuracy in restoring the joint line position after total knee replacement done using the ligament balancing technique (where bone cuts are referenced according to the equalized flexion-extension gaps). **Materials & Methods:** We present our results in a consecutive series of 84 knee replacements where a ligament balancing technique was utilized. 72 consecutive patients (34 men & 38 women) with 84 total knee arthroplasties were recruited in this study. The knee replacement was indicated for osteoarthritis in 64, rheumatoid arthritis in 8, and post traumatic arthritis in 2 patients. 74 knees had varus deformity and 10 were in valgus. All patients had Depuy LCS implant; 80 were uncemented and 4 were cemented. The average age of the patients was 76.38 years and the average deformity was 9.3°. The joint line position was calculated as a distance of the joint line from tip of the fibula. All calculations were made on GE Centricity PACS. **Results:** The mean pre-operative joint line position was found to be 15.89mm from the tip of fibular head (range 9.95 - 20.23). The average post operative joint line position was 13.28 (Range 9.90 - 19.11). The post operative alignment was on average 3.8° in valgus. On average the joint line was depressed by 02.61mm in our study. Only 10 out of 84 patients had elevation of their joint line. **Conclusion:** A ligament balancing technique restores the joint line to a more anatomical position.

Abstract no.: 30185

MINIMALLY INVASIVE POSTEROLATERAL APPROACH IN TOTAL HIP ARTHROPLASTY (27 CASES)

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Introduction: Minimally invasive total hip arthroplasty (THA) has become popular over the past few years. The advantages of this technique include reduced soft tissue damage. On the other hand, there are new risks related to reduced visualization. The widespread introduction of minimally invasive THA is still controversial.

Materials and methods: Here, we present our experiences and early results with a posterolateral approach to minimally invasive THA. Between January 2009 and January 2011, 27 hips from 25 consecutive patients were operated on using posterolateral minimally invasive THA.

Results: The outcomes were assessed on the basis of clinical and radiographic parameters. The mean operative time was 55 minutes. The mean length of hospital stay was 5.3 days. Average postoperative Harris hip score was 92.0 at 3 months postoperatively. Complications included only one (1.18%) intraoperative nondisplaced calcar split. There were no cases of dislocation, neurovascular injury or postoperative infection.

Discussion and conclusion: The minimally invasive posterior approach does not require a specific instrumentation. It enables satisfactory reproducible implant positioning. Conversion to an open posterolateral approach is possible if needed. The minimally invasive posterior approach enables a reduction in intraoperative bleeding and in postoperative pain while allowing earlier more rapid rehabilitation. The minimally invasive posterior approach is a reliable reproducible approach with a progressive learning curve.

Abstract no.: 30192

RETROGRADE NAILING IN DISTAL FEMORAL FRACTURES

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INTRODUCTION: Retrograde nailing represents an established fixation method for fractures of the distal femur and offers in femoral shaft fractures an alternative to the existing technique of antegrade nailing. The aim of this study was to investigate in a retrospective analysis the results of retrograde nailing in distal femoral fractures.

MATERIAL AND METHODS: This retrospective study looks at 9 patients with supracondylar fractures of the femur (between 2007- 2010) treated by retrograde femoral nailing (nails Zimmer). The mean age of patients was 33,7 years (min: 22 / max: 54) and 56, 7% presented with ipsilateral local pathologies or associated entities. **RESULTS:** Osseous healing occurred in 17 weeks. Postoperative complications requiring re-intervention were seen in 2/9 (22,2%) fractures (pseudarthrosis, fracture above osteosynthesis material). 6/9 patients (66,6%) were evaluated with a mean follow-up period of 13 months using the functional score of Lysholm /Gilquist and the activity score of Tegner/ Lysholm. **DISCUSSION:** Despite a reduced activity level with many local comorbidities, retrograde nailing resulted in the majority (91,1%) in reliable osseous healing. Thus, achievement of a painless fracture-site and a stable knee-joint provides early mobilization even in problematic cases. Impairment of functional outcome, mirrored in an over-all Lysholm /Gilquist score of 83,3 pts. and an over-all Tegner /Lysholm score of 4,4 pts., was mainly related to preexisting restrictions of the loco-motor system. **CONCLUSION:** Retrograde nailing represents a reliable fixation method for extra-articular and simple intra-articular fractures of the supracondylar area.

Abstract no.: 30195

DISTALLY BASED SURAL NEUROCUTANEOUS FLAP (6 CASES)

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Introduction: There are various options for covering soft tissue defects in the lower extremities, but the distal third of the leg continues to be a difficult area. The distally-based sural neurocutaneous flap which is based on the sural nerve and the superficial sural artery has been an important option since it was first proposed. **Methods and materials:** We report our experience in a 6 case series, with an average age of 38 years had different local lesions on the distal third of the leg or foot which compromised the Achilles tendon, extensor tendons in the foot and toes or the osteoarticular system, were treated using the distally-based sural flap. Two patients had lesions caused by motorcycle accidents and four were caused by car accidents. **Results:** The minimum follow up was 6 months. In all cases, the lesions were successfully covered. Only one showed necrosis of the flap, but the adipofascial tissue was well irrigated and was resurfaced by a free skin graft. **Discussion and conclusion:** The distally-based sural neurocutaneous flap is a good alternative (without major vascular sacrifice and with minor consequences at the donor site) for soft tissue defects in the distal area of the leg, a region where it is historically difficult to cover soft tissue defects.

Abstract no.: 30200

VIBRATION THERAPY FOR TENNIS ELBOW

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Lateral Epicondylitis (Tennis elbow) is a common and painful condition that presents in primary care. Systematic reviews show that there is no clear and effective treatment for the symptoms of pain in the first six weeks. Corticosteroid injections and physiotherapy are used but the results are controversial. Recommendations from the BMJ (ref 1) are rest, activity modification and anti-inflammatory medications. We explored the use of a purpose built, patient controlled unit to provide vibration therapy specifically for tennis elbow in the primary care setting. Fifty patients trialled the device with 48 responders. 47 (98%) had pain relief of their symptoms. 41 (85%) had improvement of the condition which they related to the vibration therapy. There were no complications or side effects in the trial. Vibration therapy is a recognised treatment for pain relief and works on the 'gate control' theory of pain (ref 2). It is similar in its mechanism of action to TENS machines. Vibration therapy has been proven to be effective in the treatment of the symptoms of tennis elbow. This is the first study to look at the effectiveness of this type of treatment in the primary care setting. Vibration therapy is an inexpensive, non-invasive, non-pharmacological form of analgesia. It benefits from being patient controlled, thereby promoting self-management. We believe vibration therapy could be a cost effective and safe treatment for the symptoms of tennis elbow Ref 1: Mullen C, Chesterton L, Hay E. 10 minute consultation tennis elbow. BMJ 2009;339:b3180.

Abstract no.: 30213

METATARSUS ADDUCTUS DEFORMATIONS IN CHILDREN: CAN ULTRASOUND HELP US?

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Purpose: Metatarsus adductus deformity (MAD) is common in infants. Most of the time, the evolution is toward regression. However, it is clinically difficult to identify the exact site of anatomical deformation. Two common causes of MAD are the «classical metatarsus adductus» and skew foot. The aim of this study was to differentiate «classical metatarsus adductus» from skew foot – a more complex foot deformity – using US.

Methods and materials: Using a linear high frequency transducer, the talo-navicular joint and the first ray were studied by US from medial and dorsal approaches. The mobility of the talo-navicular joint was assessed.

Results: Twenty-three patients were evaluated by US in order to characterize the MAD. Sixty-one percent were female and the deformity was bilateral in 55%. Among this cohort, 19 subjects had a skew foot and four patients had a diagnosis of «classical metatarsus adductus». Patients presenting a skew foot showed dislocation of the talo-navicular joint with lateral and plantar displacement of the navicular. The adduction of the forefoot in «classical metatarsus adductus» is localized at the junction between the first metatarsal and first cuneiform. There is no lateral displacement of the navicular.

Conclusions: US assessment of the talo-navicular joint and the first ray in infants is helpful to distinguish skew foot from «classical metatarsus adductus». Identification of the cause of adduction of the foot in children is important for treatment and prognosis. It seems from our series that skew foot is more prevalent than previously thought.

Abstract no.: 30216

**TREATMENT OF GRADE 3 OPEN FRACTURES OF TIBIA -
INTRAMEDULLARY NAILING VERSUS EXTERNAL FIXATOR**

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Introduction: Grade 3 open fractures of tibia are accompanied by high rate of infection, malunion, non-union and need for amputation. Infection rate up to 50% has been quoted in literature. We compared patients treated with reamed Intra medullary (IM) nailing versus external fixation in treatment of grade 3 open fractures of tibia. **Methods:** Fifty patients fulfilled the inclusion criterion out of which 22 patients were treated by intramedullary nailing and 24 by mono lateral external fixator device. Patients who had fine wire fixation as definitive method of fixation were not included in our study. Four Patients were transferred to other centres and were excluded from our study. The primary outcome measure was infection rate; secondary outcome measure was union rate in both the groups. The patients were followed till radiologic and clinical union was achieved. **Results:** Both the groups were comparable with regards to age and gender. Intra medullary nail group had 1 deep infection (4.5%) which required further surgical intervention. In the External fixator group 3 patients (12.5%) developed deep infection, 2 patients required below knee amputation. One (4.5%) patient each developed delayed union and non union in the IM nail group. We had 2 (8%) delayed unions and 3 (12.5%) non unions in the external fixator group. **Conclusion:** Our study concludes that the infection and non union rates were less in the IM nail group and recommends this over monolateral external fixation in treatment of grade 3 open fractures.

Abstract no.: 30217

HETEROTOPIC OSSIFICATION IN PATIENTS WITH HEMOPHILIA

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Objectives: The purpose of the study was to determine the effect of excision of Heterotopic ossification mass after radiotherapy in patients with Hemophilia **Study Design:** Descriptive case series **Place and duration of study:** Department of Orthopaedic & spine surgery, king Edward Medical University, Mayo Hospital Lahore, Pakistan. Department of Orthopaedic Surgery Rawalpindi Medical College Rawalpindi. Rothman Institute at Thomas Jefferson University Hospital, Philadelphia, USA from 2007 to 2009 **Patients and methods:** We are reporting 05 patients with Hemophilia who developed heterotopic Ossification. All of them were operated within 24 hours after pre-op radiotherapy. **Results:** Patients made uneventful recovery. The range of movements in all patients was functional & helped resolved remaining HO around the joint. No recurrence of HO was reported until todate. **Conclusion:** HO presents multiple diagnostic and therapeutic challenges. For many patients at risk for HO, either a Nonsteroidal anti-inflammatory drug (such as Indomethacin or EHDP) or local radiation therapy is recommended. Surgical intervention is indicated in advanced cases where the Ankylosis of the joint occurs. We recommend early diagnosis & management to restore the functional status of the patient.

Abstract no.: 30220

RESULTS AND OUTCOME OF PROXIMAL FEMORAL ANTIROTATION NAIL FOR UNSTABLE INTERTROCHANTERIC FRACTURES IN THE ELDERLY

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Aim: To study the results and outcome of proximal femoral antirotation nail for unstable intertrochanteric fractures in the elderly. Methods- 28 patients, 16 men 12 women aged 65 to 88 (mean, 69) years who underwent short proximal femoral nailing for unstable peritrochanteric A2 (n=17), and unstable intertrochanteric A3 (n=11) fractures were reviewed. Results: All patients achieved successful closed reduction. At the mean one-year follow-up, 90% of the patients had good or excellent outcomes, and 80% had returned to their pre-injury functional level. One patient with non-union/pseudarthrosis underwent a revision bipolar arthroplasty. Two patients had a shortening of more than 2 cms, one had an external rotation deformity more than 10 degrees. Sliding of the blade was noticed in one patient at 2 months, but the fracture healed. Two patients experienced thigh pain due to protruding tail of the blade necessitating removal in one after fracture healed .There were no instances of infection, nail breakage, cutout or iatrogenic fractures. Conclusion: The short proximal femoral nail is a superior implant for unstable intertrochanteric fractures in terms of operating time, limiting blood loss, early weight bearing and return to preinjury status. Key words: Nails, intramedullary, hip fractures, unstable.

Abstract no.: 30223

**EVALUATION OF A NEW INTRA-MEDULLARY FIXATION DEVICE VS.
PLATE FIXATION FOR CLAVICLE FRACTURES**

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Background: Surgical management of clavicle fractures has increased secondary to studies that report a higher degree of complications and lower patient satisfaction with non-operative treatment than originally thought. This work describes a novel, minimally invasive, intra-medullary device for fixation of clavicle fractures. **Methods:** Six sets of matched clavicles and 20 sets of 40 pcf bone surrogates were tested in two fracture configurations, 45 degree oblique where the two ends of the blocks were in intimate contact and butterfly configuration where an inferior fragment was removed. A 3.5 mm dynamic, 8 hole compression plate or 4.2 mm intra-medullary device were used for fixation. Unique to this study was that clavicles and bone blocks were tested in cantilever bending. Samples were tested to yield or catastrophic failure of the combined bone-implant construct. **Results:** The biomechanical data demonstrated that plates are a stronger construct only when there is intimate contact between the bone fragments and the loading environment is such that the anterosuperior surface of the clavicle is under tension. When load sharing between the bone fragments cannot be achieved or when the loading environment is such that the anterosuperior surface of the clavicle is under compression there is no significant difference between plate and intramedullary fixation. This result concurs with the bending moment to yield of the plate alone versus the bending moment to yield of the intramedullary fixation alone. Also, the intramedullary device fixation yield strength is higher and can tolerate more displacement without catastrophic failure.

Abstract no.: 30232

AN OBLIQUE ASSESSMENT OF CONTEMPORARY MEDICAL LITERATURE

Efraim LEIBNER
(ISRAEL)

Introduction: Medical literature is central in assessing and communicating medical advances. We performed a TIC* (tongue in cheek) assessment of the appropriateness of contemporary medical literature to fulfill these objectives. **Methods:** An informal survey was conducted among colleagues in and out of academia to define medical literature goals. Responses were reviewed, and accepted goals listed. We conducted an international, multi-center, double-blind, double-arm study. Technical limitations precluded a prospective study. **Arm 1:** Issues were randomly selected from prestigious internal medicine journals (Impact factor >5.0) from both sides of the Atlantic. One study was selected from each issue, and assessed for general quality, scientific value, reproducibility and clinical relevance, as well as citations. **Arm 2:** We performed a medline search for papers on a selected topic, which we assessed using the above criteria. In order to limit catchment to a manageable, we decided to select a para-clinical topic. **Results:** In arm 1, the New England Journal of Medicine (NEJM) was selected for the western hemisphere, and the British Medical Journal (BMJ) for the eastern hemisphere. The articles encountered dealt with assessment of resuscitation efficiency on popular TV series, (NEJM 334(24) 13/06/96), and with assessment of the true species of origin of orthopedic surgeons (BMJ 297(6664) -12/88). Neckties were selected as the para-clinical topic. A significant number of articles were found to have been published on this topic, quite a few of which were, to say the least, er..., 'thought provoking'. **Discussion:** Contrary to pre-conceived perceptions, inherent, implied, and theoretical value, relevance and appropriateness of contemporary medical publications require scrutiny, and careful, critical, independent evaluation.

Abstract no.: 30233

SALVAGE OF THE SEVERELY TRAUMATIZED FOOT: THE HADASSAH EXPERIENCE

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The foot and ankle are vulnerable during vocational, recreational and transportational activities. Severe foot and ankle injuries have significant impact on extremity and general function. While there have been studies about extremity salvage in general, we are unaware of a study specifically addressing foot trauma. Our foot and ankle service serves an area of over 1 million people, with a population base varying from agricultural workers to city dwellers, and serves as a referral center for a larger area. We annually perform about 450 foot and ankle interventions, of which a small percent represent severe foot and ankle injuries. We have revised our cases of severe foot and ankle trauma from the last ten years, with regard to injury mechanism and severity, surgical method, rehabilitation, and functional results. Based on this, we have developed an approach based on a number of simple guidelines. We wish to share our observations and experience, and have selected a few representative cases for presenting in detail.

Abstract no.: 30236

REVISION OF TOTAL HIP INFECTED PROSTHESIS

Ismet GAVRANKAPETANOVIC

(BOSNIA)

We want to determine the success of two-stage cementless revision arthroplasty after hip prosthesis infection. Also we compared the outcome in cases with different period of stage without prosthesis and different duration of antibiotic therapy. The clinical status is also compared with variety of used antibiotics. The radiological and the clinical results were cooperated and evaluated. The mean follow up was 5 years. The rate of control of infection was 98,0 % for early post-operative infection, and 95,5% for late infections. On the revision endoprothesis no failures were registered.

Abstract no.: 30237

**TREATMENT OF CONGENITAL CLUBFOOT BASED ON BIOLOGY AND
FUNCTIONAL MORPHOLOGY OF THE FOOT**

Ismet GAVRANKAPETANOVIC
(BOSNIA)

Introduction: To determine the role of nonoperative treatment by Ponseti management in children with congenital clubfoot. Ponseti management is based on anatomical and histological studies done in the early sixties. New findings implicated that with manipulation of the foot and maintaining correction by cast and braces, deformity could be fully reduced without any or with minimal invasive surgery (subcutaneous Achill tendon tenotomy). **Material and Methods:** In our Clinic many kinds of posteromedial release were done. All of them were followed by a significant loss of normal foot function and high percentage of relapses. Since 2006 all children with congenital clubfoot were treated by Ponseti nonoperative management. During 2006-2008 we had observed 74 patients with isolated congenital clubfoot. After a series of casting by Ponseti, all of them were evaluated by Pirani Scoring to determine whether the tenotomy of Achill tendon is indicated. After the children begun to walk, the function of foot was evaluated. **Results:** Since 2006, 74 children with congenital clubfoot (10 day to 9 months) were treated nonoperatively by Ponseti Management. After evaluation by Pirani Scoring, in 64 cases subcutaneous tenotomy of Achill tendon was done. In one case we had equines relapse and in one case cavus deformity complication.

Abstract no.: 30239

SURGICAL TREATMENT OF L5 SPONDYLOLISTHESIS: LONG-TERM RESULTS

Marcel VETRILE
(RUSSIA)

167 patients underwent surgical treatment in our clinic for spondylolisthesis. Most of the patients were with type I spondylolisthesis according Marchetti-Bartolozzi. 32 patients were operated using original distractor-system, 7 of them were observed in av. 14 yrs postoperatively (8-21 yrs). 92 patients underwent surgery with pedicular screw instrumentation, average follow-up was 6 yrs. (2-10 yrs). In patients with grade II-III low-dysplastic spondylolisthesis pedicular screw fixation was combined with PLIF. In 5 cases of grade IV-V spondylolisthesis pedicular screw fixation was combined with posterior trans-sacral L5-S1 fusion. In one 11 years old patient with sever spondyloptosis we performed L5 vertebrectomy (Gaines procedure) with L4-S1 reduction, PLIF and screw fixation. In all other cases of high-dysplastic and grade III-V olisthesis were performed two-stage surgery – posterior partial reduction of slipped vertebra and then anterior L5-S1 fusion with cortical allograft or mesh-cage. In 5 cases of high-grade spondylolisthesis rod or screw breakage occurred in the 3-mouths period between posterior reduction and screw fixation and planned anterior fusion. Reducing time between 1st stage (posterior reduction with screw fixation) and 2nd stage (anterior L5-S1 fusion) to av. 7-12 days avoid occurrence of the implant breakage in the rest of the patients. Results were assessed by clinical effect, fusion rate and SRS Outcome Instrument (modified). 81,5% showed good and 13,2% - satisfactory results. Conclusion: Achieving rigid anterior L5-S1 fixation is the key-point in surgical treatment of high-dysplastic spondylolisthesis with posterior reduction and screw fixation.

Abstract no.: 30240

SURGICAL TREATMENT OF DIFFERENT TYPES OF LUMBAR AND THORACOLUMBAR SCOLIOSIS

Marcel VETRILE
(RUSSIA)

131 patients with lumbar and thoracolumbar scoliosis underwent surgical treatment in our clinic. 64 cases were adolescents 14-16 y.o. with idiopathic scoliosis, 8 cases of congenital scoliosis deformity (age 2-15 y.o.), 42 patients – adults (26-78 y.o.). In 6 cases there were combinations of scoliosis with spondelolistesis. The Cobb angle in patients with AIS varied from 40° to 149°, in 17 patients deformity correction were performed by anterior instrumentation, in XX patients posterior instrumental correction was performed. Correction degree in patients with anterior instrumentation was greater than in patients with posterior laminar fixation, but it is the same in patients with posterior screw instrumentation. In patients with congenital scoliosis resection of hemivertebra was effectuated, and then posterior instrumental correction. In 4 cases with diastematomyelia preoperative halo-pelvic traction was performed, and then dorsal correction and instrumentation, as a result good frontal and sagittal balance correction was achieved with no any neurological complications. In adult patients with lumbar and thoracolumbar scoliosis in 19 patients (26-46 y.o.) only posterior correction and fusion was performed. In 23 patients with different neurological disturbances we performed revision and decompression of neural roots followed by moderate correction and instrumental fusion combined with PLIF. Results: In cases of lumbar and thoracolumbar AIS 40-90% correction of deformity was achieved using anterior or posterior screw instrumentation. In adult patients with scoliosis surgery lead to clinical and functional improvement, and prevents further deformity progression. Well-timed surgical correction of AIS prevents progression of the deformity in adulthood and appearance of neurological symptoms.

Abstract no.: 30299

A MOBILE BEARING TOTAL KNEE PROSTHESIS: MEDIUM TERM CLINICAL VALIDATION OF DESIGN CHOICES

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(FRANCE)

The kinematics of a total knee prosthesis is rarely based on the kinematics of a healthy joint. The vast majority of implants designed in the past twenty years are based on different and sometimes opposing concepts. The effect of these concepts on various clinical and radiologic endpoints (wear, pain, positioning, survival, etc.) needs to be analyzed. A prospective study has been performed on a single center by three surgeons on a consecutive series of 95 cases and a follow-up of more than five years after a total knee prosthesis surgery. The studied total knee prosthesis (ENDURANCE, Lépine) has the following features: - the tibial insert is free to rotate, without mechanical limitations, - this insert cannot translate in the sagittal plane, - the tibial insert and femoral component are perfectly congruent and stabilized in extension by a raised anterior edge, - a single, posterior femoral center of rotation exists throughout the entire range of flexion, - an anatomical trochlea that does not require resurfacing of the patella. The first results of this study with a survival rate of 96,2 % at 5 years show that the perioperative and postoperative expectations that go along with these design choices are reliable: - Allow potential minor positioning errors in rotation - Complete control over the planned angular correction through a simple and reproducible targeting system with intra-medullary guide, - Immediate functional results that are appropriate for the activity levels of young patients - Reduced risk of premature loosening because the lack of mechanical stops results in smoother kinematics - Increased articular surface life because the loads are spread out and below the strength limits of the polyethylene.