

**Poster**

**Session: Arthroplasty - Ankle/Foot**

**Abstract number: 22329**

**RESORBABLE MTP ARTHROPLASTY FOR HALLUX RIGIDUS: RATIONALE AND SOME CLINICAL RESULTS**

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Hallux Rigidus is a common disorder especially in older males. It leads to limitation of MTP dorsiflexion. Treatment alternatives include arthrodesis, resection arthroplasty or joint replacement. METHODS: The current procedure utilizing a Gelfoam spacer is a cross between the first two options. On the one hand, the joint retains its inherent stability and toe shortening is prevented and on the other hand the procedure is not as technically demanding as total joint arthroplasty and bone stock loss is minimal. A slowly resorbing spacer might be ideal especially if it stimulates fibrous tissue formation. Thus, the end result might be a fibrous non-union in place of the first MTP. Provided there is no bone contact, pain should be minimal and range of motion should be maintained. PATIENTS AND RESULTS: 20 patients are included in this study. Age was  $53\pm 5$  years. 14 males and 6 females. 12 patients with moderate HR grade and 8 with severe. 4 patients had 0-10° dorsiflexion and 16 with no dorsiflexion pre-op. Post-op was more than 10° in 11 patients and 0-10° in 9 patients. Pre-op Score increased from 14 poor, 6 fair to 8 good, 10 fair, 2 poor. Radiographic joint space post operative was  $4\pm 1$  mm and was the same 1 year post-op. CONCLUSION: this procedure can be used for patients with Hallux rigidus as a low cost and relatively low morbidity alternative to joint replacement surgery. Short term results appear to be superior to those usually achieved by arthrodesis.

**Poster**

**Session: Arthroplasty - Hand/Wrist**

**Abstract number: 22420**

**GIANT CELL TUMOR OF METACARPAL BONES: UNCOMMON LOCALIZATION**

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Giant cell is a benign locally aggressive tumour with the propensity of local recurrences. Giant cell tumour of hand is uncommon and only 2% of the cases reported in the hand. Limited soft tissue space, tendinous wires and rich sensorial and motor branching makes the hand difficult localization for both salvage and reconstruction procedures. We reported 3 cases of giant cell tumour in the hand. Localizations were 2 in the second metacarpal bone and 1 in the fourth metacarpal bone. Two cases were primary and one was recurrence. Curettage and cementation was performed in the initial surgery of the case of recurrence. All cases were reconstructed with the iliac wing autograft after en-bloc resection. We discuss the clinical, pathological and radiological features and treatment results of the reconstruction with iliac wing autograft.

**Poster**

**Session: Arthroplasty - Hand/Wrist**

**Abstract number: 22444**

**PYROCARBON INTERPOSITION ARTHROPLASTY IN TRAPEZIUM-METACARPAL ARTHROSIS**

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We describe our experience in trapezium-metacarpal arthrosis grade III-IV by an interposition arthroplasty of pyrocarbon. We describe the surgical technique and our preliminary results with improvement of pain and ROM. Strength results do not improve in the same grade. More follow-up is necessary to achieve results in time.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 19388**

**THE INCIDENCE OF DETECTION OF DVT AND PE BY MULTI DETECTOR ROW CT IN THA**

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Deep venous thrombosis (DVT) and pulmonary embolism (PE) are serious complications of total hip arthroplasty (THA). We assessed DVT and PE after THA by 32-slice multi-detector row CT (MDCT), which can detect DVT and PE simultaneously within one minute. We examined 114 cases of THA (101 patients) and 11 of revision THA (10 patients) between May 2006 and September 2007. There were 87 women and 14 men. The mean age at operation was 62.6 years (range, 36-84 years). All patients used a venous foot pump (VFP) on both legs until walking. Compression stockings were routinely used for 2 weeks after walking, and no drug prophylaxis was performed. At day 7, patients underwent combined MDCT pulmonary angiography and indirect CT venography of the lower limbs, with analysis of results by a radiologist. DVT was revealed by MDCT in 7 patients (6.1%). PE was detected in 5 patients (4.4%). None of these lesions was symptomatic. The incidence of DVT or PE was 8.7% in patients who underwent primary THA and 27% in those who underwent revision THA. A cutoff value of 10.0 $\mu$ g/ml for D-dimer on day 7 had high sensitivity (100%) but low specificity (55%) in the diagnosis of DVT. Our incidences of DVT and PE in primary THA were quite low, possibly due to accelerated rehabilitation and usage of VFP. D-dimer level under 10  $\mu$ g/ml on postoperative day 7 appears to be an indicator of lack of occurrence of DVT after THA.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 20309**

**IMPLANT STABILITY IN CEMENTLESS HIP ARTHROPLASTIES**

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**PURPOSE:** Post-arthroplastic loosening becomes obvious (using classical X-Rays) sometimes too late for conservative treatment. The authors study a method for early detection of implant loosening and factors of prediction for this complication of arthroplasty. **MATERIAL AND METHOD:** 40 total cementless hip replacements (8- bilateral) for primary (16 patients) and secondary post-traumatic (24 patients) osteoarthritis performed between 01.06.2004 -01.06.2008 are analysed (age 33-69 yrs).The same protocol was followed post-operative and digital X-Rays (A-P and lateral) were performed 3,6,12 months after surgery. Then, the X-rays were analysed concerning: the position of the prosthesis compared to local anatomy (the axis of the acetabulum, the angle between the stem of the prosthesis and the femoral axis), the quality of the bone- using image parameters, in standard conditions for digital exposure. **RESULTS:** The differences between the axis of the prosthesis and the anatomical ones were under 5% in the studied group, meaning a correctly positioned prosthesis. Digital X-rays revealed 0.2-0.9 microns changes of the initial position when pain appeared (6 cases), vanishing when the position was stabilized. **CONCLUSIONS:** Computer analysis of the X-rays we studied confirmed that the initial proper positioning of the prosthesis is essential for the outcome of the patient. Digital X-ray examination is clearly better than the classical one, and a complex programme for image analysis can early detect implant loosening.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 20405**

**SURGICAL OPTION FOR BILATERAL PROTRUSIO HIP SECONDARY TO JUVENILE RHEUMATOID ARTHRITIS: IS METAL ON METAL THE ONLY VIABLE OPTION IN THE DEVELOPING COUNTRIES?**

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Hip involvement is fairly commonly seen in early stages of Juvenile Rheumatoid arthritis. Progression to protrusio is a known complication which makes even the young patient bed ridden. Total hip replacement (THA) with medial bone grafting over the reamed acetabulum is the gold standard treatment. Occasional reports of Bipolar replacement in a protrusio hip without reaming acetabulum has been met with fair success in literature. We describe here a poor 19 year old young female with Rheumatoid arthritis with advanced bilateral protrusio hip (L>R) for which metal on metal THA was done on left side followed by Bipolar (BHU Hip) replacement on the right side simultaneously. The patient showed marked improvement in her pre op Harris hip score and she was walking, sitting crosslegged and squatting freely at 3 years follow up. Her Harris hip score bilaterally at 3 years post operative were comparable. This shows the viability of Bicentric Bipolar (BHU Hip) device as a surgical option in specific socio-cultural societies which demand sitting and squatting. This surgical exercise would open a new cheap treatment option for those patients around the developing world who cant afford the costly THA.

Poster

Session: Arthroplasty - Hip

Abstract number: 20638

**FINITE ELEMENT ANALYSIS OF THE ACETABULAR CUP IN THA FOR SUB-OPTIMAL POSITIONS**

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INTRODUCTION: Cup positioning in THA is crucial for risk of longterm wear. We conducted a FE analysis to the Ring-loc acetabular cup<sup>TM</sup> to examine the mechanical consequences of optimal and sub-optimal positioning of the acetabular cup. MATERIAL AND METHODS: Using the Solidworks<sup>TM</sup> and Cosmos<sup>TM</sup> software a finite element 3D model of the acetabular cup was generated. The model consisted of volumetric tetrahedral elements. Material properties of highly cross-linked and standard polyethylene (PE) were applied. Load of stance of an 80 kg person was applied to an anteverted, retroverted, steep, normal and flat positioned cup. RESULTS: The results of Von Mises stress (VMS) were compared for the various suboptimal cup positions to a normal positioned cup. The maximal Von Mises stress for a steep cup was 3 times higher and the minimal stress was 60 % times higher. For the other suboptimal positions and for highly cross-linked PE compared to normal PE, there were no marked differences in VMS. CONCLUSION: It is hereby confirmed, that a sub-optimal positioned cup is a key factor for wear, and especially a steep cup gives a localized stress-risers at stance, hence localized wear. Highly cross-linked PE did not provide better stress protection.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 20926**

**HANDMADE CEMENT SPACERS FOR TWO STAGE REVISION HIP ARTHROPLASTY**

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Infection of a hip replacement is a devastating complication for the patient and the surgeon. We are reporting the results of two stage exchange hip arthroplasty in 21 infected hips using antibiotic loaded bone cement spacers fabricated at the time of the first stage surgery. 9 spacers were made purely of bone cement injected into a special mould, while in 12 hips the extracted stem was re-sterilised and used as a spacer after it was covered with a layer of bone cement. The average period between the first and second stages was 16 weeks (range 12 to 22 weeks). 13 hips had cementless revision, while in 8 hips the prosthesis was totally cemented. Two of the moulded cement spacers were broken but were successfully removed at the second stage. At a minimum of one year post second stage exchange infection was successfully eradicated from all cases except three. The overall success rate in this group of patients was 86%. Detailed analysis revealed no difference in the success rate between cemented and cementless second stage revision. The use of these homemade spacers allowed the two stage revision while maintaining the patients' mobility, and without significant loss of bone stock. In this series the severity of infection or presence of a sinus were not found to influence the final outcome as far as the surgical and antimicrobial protocols were strictly applied. Meanwhile other general factors like diabetes and smoking can negatively affect the result; both factors were present in our three failures.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 20927**

**TOTAL HIP REPLACEMENT IN EGYPTIAN PATIENTS LESS THAN 35 YEARS**

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Young patients with secondary hip arthritis are still a challenge to the hip surgeon. We have prospectively evaluated the results of total hip replacement with ceramic heads on UHMW Polyethylene cemented cups in patients less than 35 years. The underlying causes for arthritis were osteonecrosis, acetabular dysplasia, slipped femoral epiphysis and post traumatic. 37 hips in 28 patients have been evaluated with an average follow up of 7 years (range 4-12 years). In 17 hips bulk autogenous bone graft was used to reconstruct the superolateral corner of the acetabulum while calcium triphosphate bone substitutes was used in another 2 hips. At the latest follow up only one hip was revised at one year because of failure of the bone substitute to support the cup. The Harris hip score has remained to be significantly better  $22\pm 11$  pre-operative to  $84\pm 6$  at the latest follow up ( $P < 0.05$ ). The Kaplan-Meier survivorship analysis showed a cumulative success rate of 97.3% at 10 years. The average linear wear rate was  $< 0.01$  mm per year. None of the hips was waiting or at risk of revision. These early and medium term results from an orthopaedic unit in Egypt are comparable to what has been published from centres of excellence in the west indicating that this technique is reproducible and these bearing surfaces are safe to use in young patients.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 20928**

**CONVERSION FROM HEMI TO TOTAL HIP REPLACEMENT CAUSES FOR CONVERSION AND RECOMMENDATIONS FOR YOUNG PATIENTS**

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Fractures of the neck of the femur in young patients are common in the Egyptian society. Many of these patients end by having hemiarthroplasty of the hip. We have performed conversion of hemiarthroplasty to a Total Hip Replacement (THR) in 32 hips in the period between August 2005 and December 2008. The mean age of patients at revision was 43.2 years (32-50 years). The mean period from primary surgery to the conversion was 3 years. Out of these 32 hips the original prostheses were 16 Austin-Moore, 7 Unipolar (modular head), 4 Thompson (Unipolar Monoblock) and 5 Bipolar hemi-arthroplasties. We have identified the cause for conversion in all cases and correlated this to the prosthesis used. Erosion on the acetabular side, stem loosening, infection, dislocation and unexplained pain were the causes for revision. Two types of prosthesis were found to have a common mechanism for early failure. The Austin-Moore prostheses (14 out of 16) failed because of lack of primary stability of the implant and absence of bone in-growth around its stem. The Modular Unipolar has failed in all cases because of early acetabular erosion in addition to other non specific causes like infection. The early results of these conversions were satisfactory with a significant improvement in the Harris hip score from  $39\pm 5$  to  $83\pm 9$  (Mean $\pm$ STD) ( $P < 0.05$ ). From these findings we recommend primary total hip replacement as a better choice for young patients  $< 50$  years. If Hemiarthroplasty is to be performed cemented prosthesis are preferred.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 20945**

**CEMENTED MODULAR METAL BACKED HIP PROSTHESIS FOR THA IN THE ELDERLY - A CLINICAL INVESTIGATIONAL STUDY IN 30 PATIENTS**

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Cemented modular metal-backed hip prostheses have the theoretical advantage to allow use of different inlays. Aim of this study was to investigate the first clinical results of this type of implant with special consideration to intra-+postoperative complications and early clinical results. **Patients&Methods:** Study-setup was prospective, location a university-hospital, approval for this study was granted by the local ethical-committee. Included were patients with a biological age >70 years with a fractured neck of femur. Exclusion-criteria were the inability for informed-consent, ASA-IV and infection. 30 patients were included. Mean age was 78.6 years (55.1-88.6), 23 patients were female (77%). Implant was a cemented-modular-acetabular component (C-MIC, ESKA). Outcome measures included clinical examination, the Harris-Hip-Score (HHS) and the Barthel-index (BI). **Results:** In 1 case (3.3%) the inlay was changed and replaced by an asymmetrical inlay intraoperatively. Postoperative DVT was diagnosed once. The mean preop. BI was determined with 96.5 of 100, the mean HHS with 89. At 3 months F/U the Barthel index was mean 96.1, at 6 months 96. The HHS 3mo. was mean 72pts (17pts below the preoperative status), at 6 months mean 79pts (10pts below preoperative status). **Discussion:** The C-MIC acetabular component does not show increased complication rates when compared to published results of hemiarthroplasty. The BI as measurement of mobility and ADL, showed a return to the preoperative level. Due to limitations of this study we are not able to state if THA is superior to hemiarthroplasty in geriatric patients.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 20958**

**RAPID PROGRESSION OF IDIOPATHIC BILATERAL AVASCULAR NECROSIS OF THE FEMORAL HEADS: AN UNUSUAL CASE**

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**AIM:** To present an unusual case of idiopathic bilateral avascular necrosis of the femoral heads in an 83 year old lady and its treatment.  
**CASE REPORT:** An 83 year old lady complained for aggravated pain in the left hip joint for about a month. However, clinical and roentgenographic examinations of the patient were normal. Anti-inflammatory drugs were prescribed to patient. The patient came back to emergency department after a period of two months, complaining for pain in bilateral hips, which made her unable to walk. Roentgenographic examination showed absorption and collapse of bilateral femoral head. The classification of avascular necrosis was bilateral grade IV, according to Ficat. There were not any sings of secondary etiology of avascular necrosis in this patient and all laboratory tests were normal. The patient only suffered from increased blood pressure and osteoporosis. A bipolar cement hemiarthroplasty was performed bilaterally. Small pieces of the marrow and chondronecrosis of the femoral head were found intraoperatively. Histologic examination of the segment of femoral heads confirmed the diagnosis of avascular necrosis. Postoperatively, the patient had a normal rehabilitation program and she returned to her prior to disease occupation. There were not any complications.  
**CONCLUSION:** Avascular necrosis of the femoral head may develop in adults without marked trauma and apparently without any underlying vessel disease. Osteoporosis may lead to considerable functional impairment that triggers the pathogenetic mechanism of aseptic femoral head necrosis.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21004**

**CEMENTED TOTAL HIP REPLACEMENT IN VARIOUS DISORDERS OF HIP**

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**INTRODUCTION:** Cemented Total Hip Arthroplasty (THA) has emerged as an effective option in various disorders of hip, like old # neck of femur, AVN, Secondary OA, Giant cell tumour of head or neck, Rheumatoid Arthritis, DDH, neglected Perthes of hip, in middle aged and old patients with poor bone stock. **METHODS:** In our series, 75 patients underwent 81 Cemented THA between 2001 and 2008. Pre-operative and Post operative, clinical and Radiological follow up including functional assessment were done. Mean age of surgery was 70.3 years (51-85) and duration of study was 6.3 years (5.4 to 7.8 years). **RESULTS:** Functional assessment were available for 69 patients, who had a mean Harris Score of 85.2 (53.9-98.5), a mean Oxford Hip Score 19.3(13-40). There was no case of femoral stem failure, but only in one case (case 9) aged 81 year, presented with osteolysis at bone cement interface of Acetabulum, which has been corrected by Revision THR. **CONCLUSION:** Cemented THR is very much indicated in different Hip disorders with poor bone stock.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21011**

**ISOLATED LINER EXCHANGE WITH CEMENT IN REVISION TOTAL HIP ARTHROPLASTY**

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Isolated liner exchange with cement has proven successful for treating polyethylene wear and osteolysis in select patients and provides better bone preservation and reduced morbidity in revision hip arthroplasty. However, high dislocation rates have been reported by several authors. We retrospectively analyzed 31 hips (31 patients) in 15 men and 16 women of average age 56.5 years (range, 32-79 years) at the time of the revision surgery. Mean duration of follow-up was 4.1 years (range, 2.1-8.5 years). Clinically Harris hip scores improved from 62 to 87.9 at final follow-up visits. However, postoperative dislocation was observed in 3 hips, high rates of linear wear in 2 hips (0.206mm/year), and intraoperative greater trochanter fracture in 3 hips (14.2%). However, a hydroxy apatite-coated metal shell may risk a whole component was dislodging from the pelvis. The high linear wear rate was found to be related to the use of a smaller diameter liner (-4 ~ -6mm) and non-containing liners in the metal shell. Surgeons must consider the extent of osteolysis around the cup. In particular, smooth HA-coated metal cups, smaller metal shells ( $\leq 48$  mm) and non-hemispherical inner wall of metal shell. We suggest that long lasting cemented liners and large femoral heads may overcome these complications.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21013**

**THE MATTE SURFACE FINISH CEMENTED FEMORAL STEM IN SECOND GENERATION METAL ON METAL TOTAL HIP ARTHROPLASTY**

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We observed early osteolysis and loosening of matte surface finish cement stem with a metal on metal THA and investigated the possible etiologic role of stem loosening and osteolysis by examining the retrieval studies. Thirty-nine hips were retrospectively analyzed, cement femoral stems in 18 hips and cementless stems in 21 hips. The mean follow-up duration was 10.2 years. None of the cementless stems or cups had been revised, but eight cement hips had been. Seven of the eight were loosening ( $p=0.002$ ) and one for recurrent dislocation. Periprosthetic tissues revealed abundant cement and related particles ranging in size from 5-10 $\mu$ m. However, few iron particles sized 20-100 $\mu$ m were found in tissue. The failure the cement stem in this series was suggested to be initiated by a mechanical force followed by particle-related biological process in the later stage. However, the possibility of delayed hypersensitivity to metal should be investigated in a larger cohort.

Poster

Session: Arthroplasty - Hip

Abstract number: 21069

**REVISION OF THE WELL FIXED UNCEMENTED BIRMINGHAM HIP RESURFACING ACETABULAR COMPONENT - A TECHNICAL NOTE**

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**INTRODUCTION:** The challenge of revising uncemented acetabular components has been to preserve acetabular bone stock. While the explant device has made this technically easier, the well fixed Birmingham Hip Resurfacing (BHR) acetabular component poses unique challenges. Revision of the BHR acetabular component is technically demanding due to several unique design features of this component - namely its dual radius design as well as stabilizing fins on its outer surface. Of these the dual radius geometry poses the bigger problem when using the explant. We describe a novel reliable and reproducible technique for revision of the BHR socket. **METHODS:** An adaptor was designed which, once inserted into the in situ socket corrects for the difference in radii between the inner and outer surfaces and prevents impingement of the long outer blade on the fixation surface. The problem of the fins is overcome by simply by removing the blade of the device and reinserting the blade between these. **CONCLUSION:** This novel device represents a simple, reproducible technique for revision of the well fixed BHR acetabular component. Theoretically it enables easier removal of the well fixed socket with preservation of acetabular bone.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21159**

**THE USE OF STRUCTURAL ALLOGRAFTS IN TWO-STAGE RECONSTRUCTION FOR INFECTED TOTAL HIP ARTHROPLASTY**

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We present our mid-term results with the use of structural allografts in cases of revision of failed THA due to infection. Eighteen patients with a deep infection at the site of a THA were treated with a two-stage revision, which included reconstruction with massive allografts. All the allografts were frozen and sterilised by gamma-irradiation. The mean age at the time of the revision was 65.9 years. A cement spacer containing 1 g of Gentamicin was used during the interval period. Parenteral antibiotics were administered for a period of 3-4 weeks. Oral antibiotics were given for an average of 18 weeks. The patients were followed for a mean of 8.9 years (5.4-14.2). Definite deep wound infection developed in one patient (5.6%), who underwent resection arthroplasty. An additional patient underwent revision of an acetabular component for mechanical loosening. The mean HHS improved from 34.2 points preoperatively to 70.7 points at the last review. Sixteen of the patients (88.9%) had a successful outcome. Kaplan-Meier survivorship analysis predicted 80.95% rate of survival at 14 years. Radiographically, all allograft were found to be united to host bone. There were no signs of definite loosening of any of the implants. The complications include one fracture, and two postoperative recurrent dislocations. The use of massive allografts in a two-stage reconstruction for infected THA gives satisfactory results and should be considered in cases complicated with severe bone stock loss, where standard revision techniques are not an option.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21170**

**COMBINED FIXATION OF ENDOPROTHESIS USING HIP ARTHROPLASTY**

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The aim of our investigation is the evaluation of effectiveness of usage of total hip endoprotheses with different variants of fixation of pelvic and hip components. 103 patients underwent the arthroplasty of 119 hip joints due to degenerative-dystrophic affection of different etiology in the Republican Clinical Hospital in Kazan. The main hip pathology was revealed in patients receiving steroid therapy on account of systemic diseases. In 110 cases the prosthesis with non-cement stem of a joint and a cemented pelvic component was installed, in 9 cases the opposite combination was used. We followed up treatment results in 81 patients (89 joints) from 2 to 8 years, the average term of supervision being 5 years and 4 months. Clinical and functional changes according to Harris' scale, roentgenologic indications of stability of pelvic and hip components of the implant were evaluated. Despite the positive in any respect result of treatment in the first 3-4 years after the operation, a definite tendency to aseptic loosening of a cement cup of the endoprosthesis at longer terms showed up in 5,4 % of patients. Hip replacement using non-cement cups (9 cases) gave an exceptionally positive result during the whole term of investigation. It is possible to conclude, that the usage of hybrid types of fixation is effective and can be indicative at difficulties with pelvic component fixation, especially in elderly people.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21203**

**PREVENTION AND TREATMENT OF FEMORAL NECK FRACTURE IN METAL-ON-METAL RESURFACING HIP ARTHROPLASTY**

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AIM: In the case of avascular necrosis which limited to the femoral head and the patient is young and active, resurfacing total hip arthroplasty (THA) is the best solution. But there are some problems especially femoral neck fractures after doing this approach. In this study we tried to explain the etiology of femoral neck fracture and its prevention and if it happens how to treat it. PATIENTS: We evaluated the complications of resurfacing arthroplasty in 27 patients during 4 years. All of the patients operated by the senior surgeon. They had annual anteroposterior and lateral hip x-ray. Evaluation criteria according to Harris hip score, radiographic changes and revision necessity were assessed. RESULTS: There were 27 patients (16 men, 11 women) with the mean age of 53.2 years. The mean follow up was 15.3 month. We had 2 Neck fractures in operated patients. These two patients converted to mega-head prosthesis. Harris hip score increased from 57 preoperatively to 78 postoperatively. CONCLUSION: Selection of patients for doing resurfacing THA is important: 1-Some diseases like rheumatoid arthritis and systemic lupus erytmatos who receive corticosteroid, immunosuppressive drugs, and also bad quality of the bone are not a good candidate. 2- It is better to save the capsule, then capsulotomy instead of capsulectomy is preferred. Some authors prefer to use anterior approach instead of posterior approach because of less damage to femoral neck circulation. 3- putting special retractor gently to the femoral neck during the operation is also important 4- Mega-head prosthesis is a good choice in the case of femoral neck fracture. Keywords: Resurfacing, Arthroplasty, Mega-Head, Complication.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21246**

**BLOOD LOSS AND LENGTH OF STAY FOLLOWING REVISION TOTAL HIP REPLACEMENT**

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Revision total hip replacement can be associated with substantial blood loss, significant morbidities and prolonged hospital stay. A retrospective analysis was undertaken to quantify blood loss and length of hospital stay for these patients. 246 patients who underwent revision total hip revision were reviewed. Patients' age, preoperative and postoperative haemoglobin levels, transfusion rates and length of hospital stay were collected from clinical records. The average drop in haemoglobin concentration following revision hip replacement in female patients was 3.5g/dL compared to 4.6g/dL in male patients. Patients undergoing acetabular component revision had a 3.3g/dL drop in haemoglobin compared to 4.2g/dL and 4.7g/dL in patients undergoing femoral component and two-component revisions respectively. The preoperative haemoglobin concentration did not correlate with increased need for transfusion. The average length of stay following elective revision was 14.2 days (Acetabular revision 10.6 days; femoral revision 13.7 days; two-component revision 15.2 days) compared to 26.5 days in revision surgery for infection. Patients over the age of 80 years had a significant longer stay in hospital (21.4 days) compared to patients under 80 years of age (12.5 days). The length of hospital stay did not correlate with the patients' gender, preoperative haemoglobin level or drop in haemoglobin concentration following surgery. Our data provides information on predicting the need for transfusion and planning utilisation of bed spaces in patients undergoing revision total hip replacement.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21291**

**INCIDENCE OF DEEP PROSTHETIC JOINT INFECTIONS IN RAMATHIBODI HOSPITAL**

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**BACKGROUND:** Deep infection following arthroplasty remains one of the most serious local complications preventing a successful outcome. Treatment is prolonged, frequently require reoperation and expensive. Every effort to prevent this complication is considered mandatory. **OBJECTIVE:** To determine the incidence and risk factors of deep infection in patients underwent knee arthroplasty and hip arthroplasty. **MATERIALS AND METHODS:** A prospective analysis of a consecutive series of joint arthroplasty with minimum of one year of follow-up was performed in Ramathibodi Hospital during September 2006 - October 2007. Patient demographics, preoperative intraoperative and postoperative data were collected. The operations were performed in a conventional clean turbulent-air flow operating theater. Various prostheses was used (Nexgen, PFC, PFC-HF, LCS). Deep infection identified. Unpaired t-test was used to calculate continuous data and Chi-square test was calculated for categorical data, with  $p < 0.05$  considered significant. **RESULTS:** Four-hundred and eighteen patients underwent knee arthroplasties and 182 patients were hip arthroplasties. Four deep infections occurred in patients with total knee arthroplasties and one deep infection occurred in hip arthroplasties, giving an incidence of 0.95% and 0.55% prospectively. Potential risk factors were elderly, ASA class IV, hand scrub, and long duration of surgery. **CONCLUSION:** Incidence of deep infection in knee and hip arthroplasty are within standard acceptance. More data collection would identify all potential risk factors and lead to an effective prevention.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21349**

**AUTOLOGOUS TRANSFUSION IN THE PERIOPERATIVE PERIOD FOR PRIMARY HIP OPERATION REDUCE THE RATE OF BLOOD TRANSFUSION**

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AIM: The aim of the study was to determine whether post-operative autologous salvage system affects post-operative haemoglobin (Hb) levels and reduces the need for homologous blood transfusion (HBT). METHODS: A prospective study of 211 patients who had undergone unilateral primary THR with their preoperative, post-operative Hb levels and requirement of homologous banked blood recorded. Cell Saver 5 was used post-operatively for autologous blood transfusion. RESULTS: A total 211 patients with mean age of 70 years was enrolled to the study and complete data were obtained perioperatively. The mean pre-operative and post-operative Hb levels were 137.1g/L and 105.1g/L, respectively. Twenty-four units of homologous red blood were transfused to twelve (5.4%) patients, with a mean of 0.109 units per case. There were 65 patients (29.4%) older than 75 years, with 9 patients having pre-operative Hb less than 120 g/L. Patients older than 75 years were associated with a greater use of homologous blood with those equal or under the age of 75 years (chi-squared test,  $p = 0.001$ ). Mean of in-hospital stay was 6 days. No transfusion-related and wound-related complications were reported. DISCUSSION: Primary THR can be safely performed without requiring HBT in patients without pre-existing haematological disorder using autologous retransfusion system. This study has shown that use of an autologous retransfusion system for primary THR reduces the necessity for HBT. Post-operative blood salvage also results in lesser patients dropping their post-operative Hb level below 9.0 g/L (15.8%).

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21391**

**CLINICAL AND RADIOGRAPHIC EVALUATION OF A POROUS TANTALUM ACETABULAR CUP: 5 YEARS RESULTS**

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Between January 2001 and December 2003 in the Orthopaedic Department of the University of Sassari, 80 patients between 45 and 81 years old were subjected to a total hip replacement with porous tantalum monoblock cup. All patients had a clinical and radiological, preoperatively and postoperatively evaluation and after that once every 6 and 12 months and finally every year. All patients were followed up clinically and radiologically for at least 60 months. Clinical results showed up high improvement of Harris Hip Score (average score before surgery 46, after surgery 93), indicating excellent function in the affected joint. The interface gap analysis showed up that initial gaps were no longer radiographically evident and filled during the second postoperative year. Radiographs showed the filling of all preexisting OA cysts. During the last follow up examination, all cases THAs appeared osseointegrated and there was no evidence of acetabular osteolysis. No acetabular implant was revised. The reliable and complete filling of postoperative gaps, the complete absence of progressive radiolucencies and the stability of cups, suggest that despite the results reported are considered preliminary because of the relatively short follow up period, the porous tantalum provides for initial stability and an environment conducive to osteointegration.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21626**

**TREATMENT OF VANCOUVER TYPE B1 PERIPROSTHETIC FRACTURES OF HIP USING AO-DCP AND AUTOLOGOUS BONE GRAFTING**

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Presently accepted treatment of Vancouver type B1 peri-prosthetic fracture is internal fixation with or without bone grafting. However there is no consensus over the ideal means of internal fixation. We did a retrospective study to evaluate the efficacy of a dynamic compression plate with bone grafting in fixation of these fractures. Our study included 17 patients between 1983 till 2002 with 18 Vancouver type B1 fractures. All patients were treated by internal fixation with a long broad AO-DCP (dynamic compression plating) with autologous bone grafting and inter-fragmentary screws whenever possible. Bicortical screw purchase was obtained even in the proximal fragment. The mean follow-up duration was 11.5 years. Union was seen in 94% of cases (17 out of 18 cases) at an average of 12 weeks (range: 8 weeks to 15 weeks). One non-union and one deep infection were seen. However no stem loosening was seen till the last follow-up. We compared our study with similar studies in literature by Haddad et al, Old AB and O Nagi et al using statistical test of Kruskal-Wallis (alternate to ANOVA) and found that there is no statistical difference ( $P > 0.05$ ) regarding parameters like rate of union or complication rate. We conclude that internal fixation with a broad DCP with autogenous bone grafting is a cost-effective and safe method of treating Vancouver type B1 peri-prosthetic femur fracture.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21688**

**ACETABULAR OSTEOLYSIS AFTER BIPOLAR HEMIARTHROPLASTY FOR OSTEONECROSIS OF THE FEMORAL HEAD**

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This study evaluated acetabular osteolysis of bipolarhemiarthroplasty for the treatment of osteonecrosis of the femoral head. Twenty-nine hips of 22 patients who underwent primary bipolar hemiarthroplasty for the treatment of non traumatic osteonecrosis of the femoral head were retrospectively analyzed for an average of 13.9(8-20) years. Stage of the osteonecrosis was Ficat stage III in all cases and mean age of the patients was 36.4 years. Harris-Galante I femoral stem was used in 10 cases, Multilock stem in 17 cases and Versys stem was used in 2 cases. Etiologic factors associated with osteonecrosis were alcohol 14 cases, steroid induced 4 cases and idiopathic 11 cases. Statistical analysis was performed to evaluate affecting factors for osteolysis. Acetabular osteolysis was observed in 10 cases (35.4%), and acetabular cup migration was observed in 4 cases (13.8%). In 6 cases (20.7%), bipolar cup was converted to acetabular cup due to excessive acetabular osteolysis. There was a statistical correlation between body weight, bipolar cup size, acetabular erosion and acetabular osteolysis. This study demonstrated that incidence of the acetabular osteolysis was considerably high in bipolar hemiarthroplasty for osteonecrosis of the femoral head. Body weight, size of the acetabular cup and acetabular erosion were found to be risk factors for the acetabular osteolysis. Keywords: Acetabular osteolysis, bipolar hemiarthroplasty, Non-traumatic osteonecrosis, femoral head

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21719**

**LOW MOLECULAR WEIGHT HEPARIN PREVENTS THE PROGRESSION OF THE IDIOPATHIC OSTEONECROSIS OF THE HIP**

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BACKGROUND: Among factors predisposing the idiopathic osteonecrosis of the hip, a hypercoagulable stage has been evidenced as a major risk. Many studies have demonstrated that the low molecular weight heparin could reverse the pathophysiology of the osteonecrosis of the hip in thrombophilic patients. OBJECTIVE: To determine whether the low molecular weight heparin could prevent the progression of idiopathic osteonecrosis of the hip. MATERIAL AND METHODS: 36 patients who had bilateral idiopathic osteonecrosis with at least one hip in the precollapsed stage (Ficat & Arlet stage 1-2) were enrolled to the study. The patients were randomized, 18 patients (26 hips) had received 6,000 units of Enoxaparin per day for 12 weeks and 18 patients (23 hips) had not. All the patients were given a radiographic evaluation by 3 orthopaedic surgeons and 2 radiologists every 3 months for at least 36 months. RESULTS: Of the 26 hips received Enoxaparin for 12 weeks, 15 hips (57.70%) was still in the precollapsed stage, compared to 5 out of 23 hips (21.73%) in the controlled group,  $P < 0.05$ . Seven out of Eighteen patients in the trial group have had a coagulation disorder, while there were 5 out of 18 patients in the controlled group. There was one patient who had a hematuria with spontaneous resolution after the course of Enoxaparin injection. CONCLUSION: The progression of the precollapsed to the collapsed stage of idiopathic osteonecrosis of the hip was significantly lesser in the patients received the low molecular weight heparin.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21731**

**THE USE OF STERILE OCCLUSIVE SANITARY NAPKIN DRESSING IN HIP AND KNEE REPLACEMENT WOUNDS**

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**BACKGROUND:** The worst fear of a joint replacement surgeon is infection. Many factors are known to contribute to the development of infection in a surgical set up. Post-operative wound soakage is one of them. Wet wounds lead to repeated dressing, exposing the wound for contamination, risk of infection and increased length of hospital stay. We wish to report our experience in using sterile occlusive sanitary napkin dressings in total hip and knee replacement wounds. **METHOD:** In a prospective randomized study, we compared sterile occlusive sanitary napkin dressings with standard ward gauze dressings. Our results show that use of napkin dressings reduces the dressings changes significantly before staples removal ( $p= 0.0001$ ). **DISCUSSION:** Using hydrofibre dressings have been reported to be effective in reducing the number of dressings in patients with lower limb arthroplasty. However, these dressings are expensive and may not be readily available. The use of sterile, occlusive sanitary napkin dressing in our set up has facilitated us to manage the joint replacement wounds very effectively. This method is inexpensive and reduces the number of man hours and, we believe, reduces the overall cost of the treatment. **CONCLUSION:** Convinced by the impressive performance of this dressing in joint replacement wounds, the authors recommend this method for routine primary and revision joint replacements.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21766**

**DOUBLE SETUP OPERATIONS FOR METAL-ON-METAL HIP RESURFACING OR ARTHROPLASTY IN OSTEONECROSIS OF THE FEMORAL HEAD - A BETTER AND EFFECTIVE APPROACH FOR SELECTION BONE PRESERVATION ARTHROPLASTY IN THE YOUNG**

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Extended indication of total hip resurfacing for avascular necrosis (AVN) are gradually increased worldwide accept. In theory up to 30-50% necrosis area in X-ray are acceptable to perform hip resurfacing with excellent result at least in 6-8 year follow up. However, we suspect that both plain X-ray and MRI could not provide perfectly decision making for either hip resurfacing or hip arthroplasty. Double setup operations (resurfacing or arthroplasty) were developed for final decision in intra-operation. Among 45 AVN hips, twenty-five hips were total hip resurfacing and the rest 20 hips were total hip arthroplasty. There were 13 from 33 hips (39%) that pre-operative evaluation plan change from arthroplasty to resurfacing by intra-operation evaluation. The follow up mean time was 28.6 months (5-50). All post-operative functional scores at last follow up (HHS, Oxford, UCLA, SF12) were significantly improve from pre-operative functional score ( $p < 0.001$ ). Pulmonary embolism was developed in one case with sickle cells induce AVN hip and no further complication after recovery. There were no post-operative infection, fracture neck of femur, DVT, nerve palsy, radiographic change. Double setup operations are very effective and could help resurfacing surgeon to keep away from too early total hip arthroplasty in the young.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21768**

**THE EARLY OUTCOME OF BIRMINGHAM HIP RESURFACING - AN INDEPENDENT THAI SURGEON EXPERIENCE**

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*Police General Hospital, Bangkok (THAILAND)*

We report the prospective cohort study of 40 Birmingham Hip Resurfacing (BHR) in 38 patients which performed from 2006. The mean follow up was 16.2 months (3 to 33). The mean pre-operative and last follow up Harris Hip score were 35.1 (27 to 41) and 96.4 (95 to 98) ( $p < 0.001$ ) respectively. The mean Oxford hip score were 44.3 (37 to 52) and 12.4 (11 to 13) ( $p < 0.001$ ) respectively. The mean UCLA score were 3.4 (3 to 4) and 8.8 (8 to 10) ( $p < 0.001$ ) respectively. The mean SF12 were 18.2 (14 to 23) and 62.2 (59 to 64) ( $p < 0.001$ ) respectively. There was no patient with radiological evidence of loosening or thinning of the femoral neck. Four cases had intra-operative transient blood pressure drop while impacting metal cup into circumference sealed acetabulum. However, no subsequent complication was detected. There was one case with pulmonary embolism in secondary avascular necrosis (AVN) from sickle cell anemia and resolve without any complication. One case with fracture neck of femur due to exostosis removal at anterosuperior head neck junction which exposure too much cancellous bone. She had got successfully conversion to metal on metal total hip replacement with post operative excellent result. There was no infection, deep vein thrombosis and nerve injury. The survival rate was 97.5%. As bone preservation procedure, BHR in this study provides excellent and promise result. Longer study is needed to address more complications.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21807**

**TREATMENT OF THE SEQUELAE OF SLIPPED CAPITAL FEMORAL EPIPHYSIS USING CUNEIFORM OSTEOTOMY OF THE FEMORAL NECK THROUGH SURGICAL HIP DISLOCATION**

Javier BESOMI, Dante PARODI, Jaime LOPEZ, Luis MOYA, Joaquin LARA, Claudio MELLA

*Clinica Alemana de Santiago, Santiago (CHILE)*

Long-term functional and degenerative consequences of non treated slipped capital femoral epiphysis (SCFE), have been extensively demonstrated. At present, the treatment of SCFE is well described, however the treatment of the sequelae of SCFE, once osseous consolidation has happened, remains controversial. Our aim is to describe an original technique of cuneiform osteotomy of the femoral neck through surgical hip dislocation for the treatment of sequelae of SCFE. Six hips were operated with sequelae of severe SCFE; average age of 15,2 years, whose consulting motivation was hip pain and severe limp. All of them, with bony consolidation of the femoral physis at the time of the consultation. In all cases, it was performed a cuneiform osteotomy of femoral neck and replacement of the femoral epiphysis, through surgical hip dislocation. It was made a dissection and elevation of cervical periosteum to protect the epiphyseal vessels of the femoral head; then, the cuneiform osteotomy of the femoral neck is made with replacement of the femoral epiphysis to anatomical location and fixed. The mean follow up was 21,2 months. We obtained consolidation in 100% of the cases, did not appear avascular necrosis nor other complications. An improvement was obtained according to Harris Hip Score from 37,6 points to 96,6. Correction of the epiphyseal-shaft angle was obtained from 62° to 12,6°. This technique proposed in patients with sequel of SCFE is a good alternative of treatment, with good anatomical, functional, clinical and radiological results in young patients, without mid-term complications.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21813**

**EFFECTS OF TRANEXAMIC ACID IN TOTAL HIP ARTHROPLASTY**

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**INTRODUCTION:** Numerous studies have assessed the effect of Tranexamic acid (TA) on post operative blood loss. We assess the effect of TA on intraoperative blood loss. **METHODS:** This is a prospective comparative study involving 42 patients (21 in treatment group and 21 in control group) undergoing elective total hip arthroplasty (THR). Patients were given single dose of Intra venous (I V) Tranexamic Acid 10 minutes pre-incision. Intra operative blood loss was compared to control group analyzing dry and wet swab weights and irrigation fluid. The actual haemoglobin drop, blood transfusion requirement, average length of stay in hospital and incidence of DVT were noted. **RESULTS:** There was 30% reduction in intra operative blood loss in the treatment group which was significantly less than the control group ( $P < 0.05$ ). The drop in Hb was also significantly less in treatment group. None of the other parameters show evidence of a significant difference between the groups. The average hospital stay was same (6 days) in both the groups. **DISCUSSION:** We found out that Tranexamic acid given IV before start of operation is effective in reducing the intra operative blood loss and post operative haemoglobin drop. None of the other parameters i.e. blood transfusion requirement, haematocrit fall, and hospital stay showed statistically significant difference. Our study didnt show any rise in deep vein thrombosis in treatment group. To the best of our knowledge, ours is the only study which combines all these parameters.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21815**

**WORSE CLINICAL PROGNOSIS FACTORS IN THE SURGICAL TREATMENT OF FEMOROACETABULAR IMPINGEMENT**

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With the aim of establish bad prognosis' factors in clinical outcomes in the surgical treatment of femoroacetabular impingement, we performed a retrospective study in 39 hips with femoroacetabular impingement treated through surgical hip dislocation. We evaluated clinical, radiological and surgical features. Clinical outcomes were determined classifying according to symptomatology in: asymptomatic, better and without changes or worse with respect to their preoperative condition. Statistical analysis were performed with SPSSv15.0. The mean follow up was 3 years; 79.5% hips were asymptomatic, 18% better and 2.5% without changes or worse. In patients older than 50 years old, 50% were asymptomatic versus  $\geq 80\%$  in youngers than 50 years old ( $p < 0.05$ ). Mixed impingement presented 62.5% asymptomatic versus 83.9% in cam and pincer impingement ( $p = 0.2$ ). In cases with osteoarthritis, 76% were asymptomatic versus 85.7% in those there were not radiologic osteoarthritis ( $p = 0.6$ ). The risk of osteoarthritis increased when the patient was  $> 35$  years old ( $p < 0.05$ ). A longer time of symptomatology evolution was associated with greater incidence of osteoarthritis ( $p = 0.1$ ). When the labrum was conserved, 90% were asymptomatic versus 78.6% in the cases where the labrum was resected ( $p = 0.6$ ). Surgical hip dislocation is a good technique for the treatment of femoroacetabular impingement, with good clinical results. We identify clinical, radiological and surgical factors that are associated with poorer clinical outcomes; they were: age  $> 50$  years old, mixed impingement, hip osteoarthritis, labrum resection and prolonged symptomatology time.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21880**

**DOES TRANEXAMIC ACID REDUCE BLOOD LOSS IN JOINT REPLACEMENT SURGERIES?**

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STUDY DESIGN: We performed a prospective study in 32 patients scheduled for Hip & Knee joint replacement surgeries. OBJECTIVE: To determine the effect of synthetic antifibrinolytic agent tranexamic acid on post operative blood loss in joint replacement surgeries. METHODS: Out of 32 patients of Hip and Knee joint replacement in 16 patients (8 patients each of hip and knee replacement) tranexamic acid was used & in rest 16 patients (8 patients each of hip and knee replacement) no tranexamic acid was used. Tranexamic acid dose was 10 mg/kg as bolus I/v injection 15 minutes before incision followed by another injection at the end of the surgery. We recorded the post operative blood loss at the removal of the drain 24 hrs after the surgery, pre and post surgery haemoglobin levels and number of blood units transfused. RESULTS: Patients receiving tranexamic acid had a less amount of post operative blood loss as compared to the patients not receiving tranexamic acid. In knee replacement average blood loss with tranexamic acid was 150 ml and without tranexamic acid was 300ml. Similarly in hip replacement average blood loss with tranexamic acid was 300 ml and without tranexamic acid was 500ml. Post operative haemoglobin values were high in tranexamic acid group and number of blood units transfused in tranexamic acid group was less. No patients in either group had symptoms of deep venous thrombosis, pulmonary embolism or prolonged wound drainage. INTERPRETATION: Tranexamic acid is effective in reducing post operative blood loss in joint replacement surgeries.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21926**

**BIOLOX®DELTA: NANOCOMPOSITE CERAMICS FOR ARTHROPLASTY**

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Over the past 20 years, applications for ceramics in orthopaedics have continuously increased. The first application of ceramics in this field was a pure medical-grade alumina. To fulfil the increasing requirements of patients and surgeons, ceramists have also developed a new ceramic composite, the alumina matrix composite (AMC). This material combines reinforcement mechanisms in the ceramics with its excellent tribological qualities and represents enhanced mechanical strength and fracture toughness compared to alumina. The outstanding properties of the material BIOLOX®delta support advantageous properties of the final product, e.g. ceramic hard-hard bearings for hip arthroplasty. The burst load of the components is significantly increased. It is shown that the design of the components is also very important for the reliability and the ultimate properties of the system. However, good taper conditions are essential for the ceramic components to fully use their strength abilities. Thus adequate intraoperative handling is mandatory. Wear properties at severe conditions are significantly improved by using the new composite material BIOLOX®delta in comparison to pure alumina. Hydrothermal aging is extensively discussed. Due to the particular distribution and stabilization of the zirconia particles instable aging effects are not possible in this material. After very long time of accelerated aging conditions an increase of monoclinic phase is found however, it is shown that dynamic and static properties of BIOLOX®delta are not influenced by this effect. The excellent mechanical properties are reproduced batch by batch with a very low scatter.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21930**

**RELATIONSHIP BETWEEN DISLOCATION AFTER TOTAL HIP ARTHROPLASTY AND PREOPERATIVE RANGE OF HIP MOTION: MULTIPLE LOGISTIC REGRESSION ANALYSIS**

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**INTRODUCTION:** Dislocation after total hip arthroplasty (THA) is studied from various aspects worldwide. However, only few reports are available on the relationship between the preoperative range of hip motion and dislocation after THA. The objective of this study was to elucidate this relationship. **PATIENTS AND METHODS:** Between 2000 and 2004, 1288 THAs (in 882 patients) were performed at Saga University. The patients included 688 women and 194 men. The average age at the time of surgery was 61.7 years. All operations were performed by one senior surgeon. We calculated the incidence rates of dislocation and analyzed the preoperative factors associated with this condition. Multivariable logistic regression analysis was used for statistical analysis. The following variables were recorded into the model: incidence of dislocation, age, sex, original diagnosis, history of previous surgery, and preoperative range of hip motion (flexion, extension, internal rotation, external rotation, adduction, abduction, flexion-extension arc, and internal-external rotation arc). A P value of less than 0.05 was considered statistically significant. **RESULTS:** Among all the patients who underwent THA, 2.9% experienced dislocation. Dislocation once occurred in 26.3% and recurrent dislocations occurred in 73.7%. Significant risk factors for dislocation were abduction, internal rotation, external rotation, flexion-extension arc, and internal-external rotation arc. **DISCUSSION AND CONCLUSION:** A close association exists between the preoperative range of hip motion and the incidence of dislocation after THA. We should examine THA patients more carefully and to consider their lifestyle, religion, occupation, and role in the society.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21945**

**THE BIRMINGHAM MIDHEAD RESECTION ARTHROPLASTY- ANOTHER RESURFACING OPTION**

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**INTRODUCTION:** Conventional resurfacing is contraindicated in patients with structural femoral head defects. Total hip arthroplasty is usually the only choice in this group. We report the early results of the Birmingham Mid head Resection (BMHR) arthroplasty performed between May 2006 and July 2007 in young, active patients with femoral head defects. **METHODS:** This prospective study included 9 patients. Pre and post operative clinical evaluation along with Harris, Western Ontario Macmasters (WOMAC) and Oxford hip scores were performed and patient satisfaction assessed. Return to activity and sport was recorded. All operations ere performed by a single surgeon via a posterior approach. **RESULTS:** The average age of our cohort was 42.8 years (23.9-54.8 years). Average duration of follow up was 12 months (6-18 months). Pre operative Harris, Oxford and WOMAC hip scores were 48.1, 36.7 and 42.2 respectively. Mean post operative scores were 97, 12.7 and 3.9 respectively. There were no clinical or radiological signs of loosening at last follow up. All patients had returned to their preoperative levels of sporting activity and some had taken up new sports. No patients were lost to follow up. **DISCUSSION:** The BMHR arthroplasty has shown good early results in treatment of young, active patients with femoral head defects. It seems to offer a resurfacing option in this group with the inherent benefits of improved stability and while allowing preservation of femoral bone stock. There is also the potential for a technically less demanding future revision.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21950**

**INFLUENCE OF MENTAL ACTIVITY ON THE REHABILITATION PROCESS AFTER TOTAL HIP ARTHROPLASTY - A PROSPECTIVE RANDOMISED STUDY**

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After longer hospitalisation of patients a reduction of mental performance is described. Does a higher mental performance influence the rehabilitation of patients after Total Hip Arthroplasty (THA)? **PATIENTS AND METHODS:** A prospective study was performed with patients who underwent THA. The study period was 12 days. 16 patients 66±9 years (6 male) were randomly added to a group who played Dr Kawashimas Brain Jogging on a e-game Console. They were compared to a control group of 16 patients 69±14 years who did not play. On the day before surgery and 9 days after surgery the mental performance was measured. A Harris Hip Score and a Merle d'Aubigne Score was measured the day before surgery and 12 days after surgery for all patients. **RESULTS:** With daily exercise of specific e-games in the play group, the fluid intelligence (median IQ 99 à 106), memory capacity, and the rate of information processing significantly improved in the course of 7 postoperative days. The mental performance of patients in the control group did not increase. The Harris Hip Score and the Merle d'Aubigne Score also improved significant in the play group. The differences of the preoperative scores to postoperative scores play group vs. control group were significant improved (37.6 vs. 28.6 p>0.041). **CONCLUSION:** Exercise with e-games can prevent the loss of cognitive performance during prolonged hospitalisation and may help to increase the speed of physical rehabilitation.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 21997**

**HIP RESURFACING FOR AVASCULAR NECROSIS IN INDIA: A LIGHTHOUSE IN THE DESERT?**

Vijay SHETTY

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AIM: Avascular necrosis of the hip joint in young people is a serious challenge to hip surgeons. In India, AVN is the commonest reason for arthroplasty in young patients. There are various arthroplastic options and, hip resurfacing (HR) is fast becoming popular in that direction. India is one of the hot destinations for medical tourism and hip resurfacing is one of the operations that is performed regularly as part of the tourism initiative. Most surgeons claim that hip resurfacing is the answer for avascular necrosis. However, there is not much published work from the Indian subcontinent. The author wishes to present a personal case series. METHOD: Between February 2006 and October 2008, the author identified 42 (26 males and 16 females) patients for arthroplastic treatment of avascular necrosis. 28 of them were planned for hip resurfacing. However, the author was able to perform HR in only 20 patients. RESULT: Almost third of the patients were deemed not suitable, at operation, for HR due to fragmentation of the femoral heads. This is possibly because of the very late presentation and long-term use of steroids. CONCLUSION: The author believes that it is important that an informed consent is taken from the patient, who is admitted for HR that, on table, there is a possibility of converting the procedure to a conventional total hip replacement.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22004**

**REVISION HIP ARTHROPLASTY IN PATIENTS WITH FAILED PREVIOUS REVISIONS WITH HIGH PLACEMENT OF AN ACETABULAR COMPONENT**

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The purpose of this study is to present the results of second or third revision hip arthroplasty in patients in whom acetabular component was implanted primary and revisionary in neoacetabulum, in a position of previous high dislocation of the hip. **MATERIALS AND METHODS:** Five such patients (five hips), four females and one male, had the operations because of aseptic loosening of acetabular component, in our hospital during years 2007-2008. Four of five hips, after the primary operation, had one revision operation of acetabular component. One hip had two revision operations in the same segment. Acetabuloplasty with bone graft was done to all of the patients. Solving of these complex problems included: removal of both prosthetic components, femoral abbreviation osteotomy in three patients, acetabuloplasty with bulk femoral head allograft and implantation of hybride type of hip prosthesis. Acetabular components were implanted in the primary acetabulum. One patient had an operative complication-longitudinal fracture of the femur and the other one, two months after the operation suffered from periprosthetic femoral fracture. At the time of the latest follow-up, all five prosthesis are intact. **CONCLUSION:** Despite the fact that number of 5 hips is not significant, these findings suggest that superior positioning of the acetabular component, leads to increased rates of loosening of acetabular components. An attempt should be made to position the acetabular component in or near the true acetabular region.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22057**

**AUTOHEMOTRANSFUSION IN PLANNED ORTHOPAEDICS**

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*Moscow Regional Clinical Research Institute, Moscow (RUSSIA)*

AIM: The objective of the study is to develop and introduce an optimal strategy in clinical practice by compensating the blood loss during surgeries with the patients own blood. MATERIALS AND METHODS: Out of 1630, 1250 auto donors analyses of clinical observation, laboratory examination and results of functional control were analyzed in the study. Preoperative blood collection, with prior exfusion of 450-500 ml autoblood was performed 4-5 days before surgery. Autoerythrocyte mass and autoplasm were prepared from autoblood and were returned during the surgery in all 1250 patients. In the control group with 380 patients who refused to be as autodonors before surgery had transfusion of blood components from other donors. The values of lab tests in the study group were comparable with the results of control group. At the same time, 2 delayed hematological reactions were observed in the control group. RESULTS: The study shows that, in patients who have no contraindication to planned orthopaedic surgery has either any contraindication (except hepatitis, AIDS, Syphilis) to autodonation. Intraoperative sampling and reinfusion of blood is advisable during a blood loss of more than 1 litre. Sampling of drained blood is mandatory to be performed in all patients. Reinfusion of obtained blood is expeditious when the drained blood is more than 250-300 ml. Administration of autohemotransfusion allowed us to decrease the general necessity of donors blood up to 90% and dismissed the use of donors blood components during planned orthopaedic surgery.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22081**

**CLINICAL ASPECTS OF THE OSSEOINTEGRATION OF SLPS (SELF LOCKING POROUS SYSTEM) HIP JOINT ENDOPROSTHESIS**

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From 1997 to 2008 we used uncemented SLPS hip replacements in a consecutive series of 1444 primary total hip arthroplasties. In order to increase proximal fixation of the stem, two porous titanium inserts - 2-5 mm thickness each, connected among themselves with apertures are used in the press-fit stems. The specified inserts provide, unlike the other implants known to us, a deep throughout growing of the bone tissue and strong fixation of an implant. We performed detailed clinical and X-ray analysis of osseointegration with accent on bone remodeling and its bonding at the proximal part of the stem (the region of the inserts) of the 181 endoprosthesis, implanted from 2003 to 2004. The average age of patients was 58,3 years (from 22 to 80), 13 had bilateral replacements. The mean follow-up period was five years. Cumulative rates of survival for revision as the end-point were 97,8% for the femoral components and 100% for acetabular components. A throughout growth of bone tissue into the titanium inserts was investigated using four implants which were removed according femoral fracture (Vancouver B-3) -2, infection-1, loosening-1. Porous inserts and break surface passed the microphotography with light microscope. Porous inserts with ingrown bone tissue were evaluated with scanning electronic microscopy with chemical analysis system with special emphasizes on the spread and mineral contents.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22099**

**EARLY RESULTS AFTER THE TREATMENT WITH TOTAL HIP ARTHROPLASTY USING A LARGER DIAMETER FEMORAL HEAD VERSUS BIPOLAR ARTHROPLASTY IN PATIENTS WITH FEMORAL NECK FRACTURES**

Myung-Rae CHO, Hyun-Seop LEE

*Catholic University Hospital of Daegu, Daegu (KOREA)*

We studied the short-term clinical outcomes of THA with large diameter femoral head (36 mm) and BA in physiologically active elderly patients with displaced femoral neck fractures. The clinical and functional results were better in the THA group than in the BA group. The mean operation time and mean intra-operative blood loss was not statistically significant between the two groups. Despite there being no limitation of range of motion in the early post-operative period, no dislocation was encountered in either group. From this point of view, a THA with large diameter femoral head is recommended for the management in patients with femoral neck fractures because THA produces a better result than BA.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22106**

**A USE OF LARGE FEMORAL HEAD IN TOTAL HIP ARTHROPLASTY**

Hyun-Seop LEE, Myung-Rae CHO

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**INTRODUCTION:** This study was to evaluate results of short-term follow-up in total hip arthroplasty using 36mm large femoral head. **MATERIALS AND METHODS:** We evaluated 104 primary total hip arthroplasties using 36mm Cobalt-Chrome femoral head with Longevity® (Zimmer®, Warsaw, IN) polyethylene from August 2004 to August 2007. The average age at the time of index operation was 61.4 years, average period of follow up was 27 months (range, 12 months to 46 months). **RESULTS:** Dislocation was observed once in 1 case. In other cases, complications such as infection, periprosthetic fracture, osteolysis, implant loosening and nerve injury was not demonstrated. Modified Harris Hip Scores are more than Good in all cases with an average score of, 90 and Merle d Aubigne and Postel scores are more than Good in 75%. All stems cemented or cementless showed satisfactory fixation. **CONCLUSION:** One dislocation was encountered in spite of permitting no limitation in immediate postoperative joint movement and thus, total hip arthroplasty using a large femoral head gave a higher satisfaction to the patients. **KEYWORDS:** Total hip arthroplasty, Large femoral head, 36 mm, Longevity®, Dislocation, Highly cross-linked polyethylene, Dislocation

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22240**

**SURGICAL TREATMENT OF BILATERAL COXARTHROSIS WITH ENDOPROSTHESIS SLPS ALTIMED**

Anatoly DOSTA<sup>1</sup>, Oleg KEZLYA<sup>2</sup>, Vladislav JARMOLOVICH<sup>2</sup>, Alexander BENKO<sup>2</sup>

<sup>1</sup>ALTIMED JSC, Minsk (BELARUS), <sup>2</sup>Belarusian Medical Academy of Post-Graduate Education, Minsk (BELARUS)

The aim of clinical study is the research of possibility of and indications for application of two-stage surgery treatment method of patients with osteoarthritis of hip joint. **MATERIALS AND METHODS:** 103 patients have undergone an operation of two-stage total endoprosthesis replacement in clinic. Indications for operation: idiopathic coxarthrosis, avascular necrosis of whirlbone, consequences of hip dislocation and dysplasia, rheumatoid arthritis. Patients' statistics: men 38, women 65, aged 20-73. All patients were determined with 3-4 lesions stages. **RESULTS AND CONCLUSIONS:** Operative intervention is carried out with 3-4 months interval between the operations. The endoprosthesis SLPS of ALTIMED company was used. Primary stability and biocompatibility with bone tissue is provided by wedge-shaped form of triclin, conic cup with self-tapping thread, principle of selective porosity, ceramic coating of oxide film (TiO<sub>2</sub>), applied by cold means. There are porous titanic insert in base of prosthesis stem depth up to 5 mm, with pores from 150 up to 350, providing lasting healing of prosthesis with bone tissue in proximal part of implant crus. There is the same insert at the bottom of polymeric bearing. The standard treatment reports were used. Follow-ups were observed in period from 12 up to 120 months. H. Harris scale: excellent follow-ups 35 (34%) patients, good 48 (46,5%) patients, satisfactory 17 (16,5%) patients, unsatisfactory 2 (3%) patients. Foresaid information allows to evaluate our experience of two-stage endoprosthesis replacement of hip joint with endoprosthesis SLPS of ALTIMED company as positive and implant quality as very high.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22242**

**ENDOPROSTHESIS SLPS OF ALTIMED JSC IN TREATMENT OF PATIENTS WITH BLAND NECROSIS OF FEMORAL HEAD**

Oleg KEZLYA<sup>1</sup>, Anatoly DOSTA<sup>2</sup>, Vladislav JARMOLOVICH<sup>1</sup>, Alexander BENKO<sup>1</sup>

<sup>1</sup>Belarusian Medical Academy of Post-Graduate Education, Minsk (BELARUS), <sup>2</sup>ALTIMED JSC, Minsk (BELARUS)

Purpose is to select a method of operational intervention for patients with double-sided aseptic necrosis of femoral head depending on degree of metabolic activity. MATERIAL AND METHODS: In hospital of BelMAPE, 12 patients with double-sided aseptic necrosis of femoral head has undergone rotational osteotomy on one side, and total endoprosthetics on the other. All patients had cementless hip joint endoprosthetics with endoprosthesis SLPS of ALTIMED company (Belarus). In order to assess the activity of metabolic processes in lesion focus of pathology, a method of static osteoscintigraphy with bone-seeking radiopharmaceutical <sup>99m</sup>Techneium-pyrophosphate and <sup>99m</sup>Techneium-Medronate was used. Among patients there were 11 men and 1 woman (20-30 years). All cases of extensive accumulation (110% with respect to intact extremity) were considered as variants of hyperfixation of the preparation in the projection of diseased joint. RESULTS AND CONCLUSIONS: Period of follow-up amounted to 36-72 months. All patients are satisfied with the results. Total endoprosthetics is justified in cases of short period of disease and high metabolic activity (230%) of the process on the side of pathology focus, independently of age or stage of disease. Rotational osteotomy is justified for patients with long period of disease and low level of methabolic activity (140-180%) on side of disease. Thus, osteostincigraphy of hip joint helps to determine the focus of pathologic hyperfixation at the early stage of the disease, and to assess the activity of process. This preserving operation can be an alternative to total endoprosthetics, especially for people of young and middle age.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22247**

**USING ENDOPROSTHESIS SLPS OF ALTIMED JSC IN TREATING PATIENTS WITH COXARTHROSIS**

Anatoly DOSTA<sup>1</sup>, Oleg KEZLYA<sup>2</sup>, Vladislav JARMOLOVICH<sup>2</sup>, Alexander BENKO<sup>2</sup>

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Operation of hip joint endoprosthetics is a highly-efficient, and sometimes the only radical method of treating severe pathology of hip joint. Main feature of the designed hip joint endoprosthesis is the principle SLPS (Self-locking Porous System). Primary stability and biocompatibility with the bone tissue is provided due to the wedge-shaped triclinic stem, conic cup with self-cutting thread, the principle of selective porosity, and cold ceramic coating with titanium oxide (TiO<sub>2</sub>). Basis of the endoprosthesis stem has porous titanium inserts with deepness up to 5 mm, and pore sizes from 150 to 350 micron, which provide reliable union of the prosthesis with the bone tissue in the proximal part the implants stem. At the bottom of the polymeric insert there is another porous insert of this kind. In the period from 1996 to 2007 about 1430 operations with 1341 patients was performed in the hospital of traumatology and orthopaedics of the Belarusian Medical Academy of Post-Graduate Education. Aetiology is as follows: coxarthrosis, avascular necrosis, false joint of the femoral neck, rheumatoid arthritis, post-traumatic coxarthrosis, etc. Standard clinical protocols were used. Intraoperational, early, late postoperational complications were studied. Analysis of the afterhistory in accordance with system of W.H. Harris confirmed high efficiency of the created prosthesis.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22248**

**PATIENT COMPLIANCE WITH DEEP VEIN THROMBOSIS PROPHYLAXIS FOLLOWING LOWER LIMB ARTHROPLASTY SURGERY**

Shanmugasundaram RAJKUMAR

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**INTRODUCTION:** To assess the compliance with DVT prophylaxis following lower limb arthroplasty. **METHOD:** Following hip joint replacement surgery, 68 patients were asked to fill in anonymised questionnaire at 6 weeks. They were asked about awareness for DVT, type of prophylaxis given and their compliance with treatment. **RESULTS:** 60 patients (88%) were aware of the risk of DVT while 2 were not aware and 6 were not sure. 32 patients remembered discussing risk of developing DVT while 9 did not and 9 were not sure. 43 patients (68%) were aware of prophylactic methods. Except for 2 patients, the rest patients (96%) confirmed receiving prophylaxis. 52 patients (76%) had mechanical prophylaxis in the ward while 6 continued at home as well. 46 patients (92%) remembered receiving chemical prophylaxis both in the ward and at home thereafter. 46 patients received chemical prophylaxis (injections) for 10 days, 6 patients for 7 days, 15 patients for a few days and 1 patient for 6 weeks post-op. 51 patients (75%) self administrated the injections while 9 had family members help and 3 had district nurse visit. 65 patients (95.5%) received injections for the complete duration. 3 patients could not recollect receiving injections at home (missed nurse visit 1, not advised 1, forgot to inject 1). **DISCUSSION:** DVT compliance is an issue in surgery especially when patients were asked to self-administer the injections. We achieved 95 % compliance with our protocol. This study shows that greater emphasis on patient education, awareness and motivation may improve compliance.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22368**

**TOTAL HIP ARTHROPLASTY AS TREATMENT FOR COXARTHROSIS SECONDARY TO TUBERCULOSIS OSTEOARTHRITIS OF THE HIP**

Paul Dan SIRBU<sup>1</sup>, Paul BOTEZ<sup>1</sup>, Aurora CRETU<sup>3</sup>, Constantin BARBAROSIE<sup>1</sup>

<sup>1</sup>"Gr. T. Popa" University of Medicine and Pharmacy, Iasi (ROMANIA), <sup>2</sup>Rehabilitation Clinical Hospital, Iasi (ROMANIA)

Is a retrospective study of 2125 total hip prosthesis implanted in the Rehabilitation Hospital Iasi, Romania between the 1985 and 2009. We have identified the total hip arthroplasties performed for coxarthrosis secondary to a tuberculous coxitis. In our report we present 16 cases with the preoperative evaluation, preoperative protocol and after treatment. The result was good and excellent in 90 p.cent of the cases. The relapse of the tuberculous infection occurred in a single case, witch also complicated with a periprosthetic fracture. Total hip arthroplasty was performed in the majority of cases, long after stabilization of the tuberculous process, and the antituberculous medication prescribed before and after the operation turned out to be sufficient in these cases, which had good and excellent results. In the terms of the same treatment, in the only case for which arthroplasty was performed in an early stage after stabilization the relapse of tuberculous process occurred, as well as important periprosthetic osteolysis. In our retrospective series, in one case with a recent acetabular fracture, tuberculosis osteoarthritis wasnt detected before performing arthroplasty. After arthroplasty, the tuberculosis process increased, producing early bipolar loosening of the total cimented prosthesis. It was necessary to revised it, with drainage and with the rebuilding of the bone defects. Tuberculosis osteoarthritis was stabilized after tuberculostatic therapy in IOMS regime, for 12 months. We believe the prolonging of the tuberculostatic therapy for 6-8-12 months after surgery to be necessary in arthroplasties following recently stabilized tuberculous osteoarthritis of the hip.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22395**

**THE TREATMENT OF THE TROCHANTERIC FRACTURES BY PRIMARY HIP PROSTHESIS**

Paul Dan SIRBU<sup>1</sup>, Paul BOTEZ<sup>1</sup>, Constantin BARBAROSIE<sup>1</sup>, Aurora CRETU<sup>2</sup>, Adriana NITESCU<sup>2</sup>

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We present our experience in the treatment of the trochanteric fractures, using primary hip arthroplasty, assigning its principals indications, in regard with the classical surgical treatment for this type of fractures, meaning DHS plate and screw or Gamma nail (PHN). Our lot includes 25 cases with complex trochanteric fractures, that were operated between 2002-2009. All patients were aged between 61 and 90 years old, the last decade (between 80 and 90) dominating our statistics (45 p.cent). The primary hip arthroplasty was in most of the cases (85 p.cent) the hemiarthroplasty. Cemented or uncemented total hip arthroplasty was the choice we used for the 15 p.cent of the cases, cases witch presented advanced artrosic lesions on the fractured hip. The immediate postoperative evolution for all the cases was simple, without local or general complications. Uprising and walking with support on the operated limb were possible very early in the first days/weeks from the intervention. The postoperative mortality rate at one year and over, after surgery was no greater than the mortality rate of patients treated by osteosynthesis, distant complications or mortality depending especially of other factors like sex, age and associated comorbidities, then the fracture complexity in relevance with its classification. The difficulty of the orthopaedic reduction on bones that were osteoporotic by excellence and fragile, corroborated with the necessity of early mobilization and restart walking of these patients, represented the main indication and motivation in favor of hip arthroplasty versus osteosynthesis.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22396**

**CEMENTLESS METAL-ON-METAL HIP ARTHROPLASTY IN YOUNG PATIENT, LESS THAN 55 YEARS OF AGE - PRELIMINARY RESULTS**

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*"Gr. T. Popa" University of Medicine and Pharmacy, Iasi (ROMANIA)*

Twentyfive cementless hip arthroplasties using metal-on-metal articulation were consecutively implanted in 25 patients less than 55 years of age and compared with a matched control group (age, Harris hip score, Devane score) of cementless arthroplasties using ceramic-on-ceramic and metal - polyethylene articulation. The Harris hip score at follow-up (minimum 2 years) for the metal-on-metal was 95. After the same follow-up, the results of the ceramic-on-ceramic and polyethylene-metal were significantly different. With the same survival rates for both groups, the functional results (range of motion, stability and postoperative recovery) were significant increased for metal-on-metal bearing. The metal-on-metal is recommended to prevent wear problems in younger and more active patients. A longer follow-up is required to confirm this encouraging data.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22425**

**THE DISLOCATING HIP - TO BRACE OR NOT TO BRACE?**

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**BACKGROUND:** Dislocation complicates approx 1% of primary total hip arthroplasties. The use of abduction braces in the treatment of this complication is controversial. This retrospective review was carried out to discern the efficacy of this treatment modality. **METHODS:** Databases were searched to identify primary hip replacements complicated by dislocation between the years 2000-2008. Risk factors for dislocation were recorded including: age, sex, co-morbidities, approach, head size, femoral component, level of experience of surgeon and type of anaesthesia. Phone interviews identified the mechanism of dislocation, whether the patient was braced, length of time spent in brace and difficulties with brace. Post operative radiographs were examined to assess leg length discrepancy, offset discrepancy, trochanteric non-union and cup abduction angle. **RESULTS:** Sixty-seven dislocatable primary hips were identified. The use of 22mm heads, posterior approach and poor biomechanical reconstruction of the hip was prevalent amongst dislocators. Fifty-four patients were treated with an abduction brace. Sixty-nine percent (37 patients) of this group went on to have a further dislocation and 31% (17 patients) had no further dislocations. Thirteen patients were not treated with a brace following their first dislocation. Of this group 69 percent (9 patients) went on to have a further dislocation and 31% (4 patients) had no further dislocations. Thirty-one percent of patients that were braced dislocated whilst wearing their brace! **CONCLUSION:** There is no difference in outcome, when comparing patients who are braced and those who are not. Braces are costly (€950), uncomfortable and ineffective. There is no evidence for their continued use.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22442**

**LEARNING CURVE FOR DIRECT ANTERIOR APPROACH ON ORTHOPAEDIC TABLE IN PRIMARY TOTAL HIP REPLACEMENT: COMPLICATIONS AND EARLY RESULTS OF THE FIRST 100 CASES**

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The minimally invasive direct anterior approach (DAA) for total hip replacement (THR) is an intermuscular and internervous procedure which theoretically ensures a fast recovery with a low dislocation rate. This study aims to evaluate prospectively if the learning curve of this approach permits to ensure good functional results without an unacceptable complications rate. One hundred consecutive primary hip arthroplasties implanted in 85 patients through a direct anterior approach on orthopaedic table have been prospectively followed. Patients were unselected except for overweight (BMI > 38). There were 7 hybrid and 93 uncemented hips implanted for arthritis, osteonecrosis and fracture. The average patient age was 63 years. At six month, the mean Harris Hip Score was 95/100 for Charnley A and B hips. Despite the fact that in this series 40 % of the patients presented with dislocation risk factors, one single dislocation occurred in a patient suffering of a Marfan syndrome. Other complications comprised two wound infections and two occult femoral shaft fractures (one associated to secondary stem sinking). Four partial greater trochanter fractures were observed in obese and osteoporotic patients but without functional consequences. Neither deep infection nor nerve palsy was observed. Even during a learning curve in an unselected population, the dislocation rate (1%) is low in comparison to that observed generally by posterior approach (5%) in the same population. Despite the shaft fractures, more probably related to the uncemented technique, anterior approach on orthopaedic table is a safe technique applicable to all primary hip patients.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22501**

**NEW REVISION CUP FOR DEFECTED ACETABULUM**

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New revision cup for treatment of loosening, defected THP was presented in 2007. It was used for acetabular defect Paprosky 2b, 2c and 3a. It allowed better primary stability and bone remodeling directly in the defect. 47 patients reoperated with this cup have been followed up more than 3 years. Appropriate fixation has been controlled on Xray, clinical results compared with modified HH score. Complications (2) are discussed.

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22550**

**METHODS OF DETERMINATION OF OXIDATIVE DEGRADATION AND RESIDUAL RADICALS CONCENTRATION IN ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLEN**

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The key step in manufacturing of UHMWPE is sterilization, performed by means of ionizing radiation. Recent studies proved that ionizing radiation may lead to oxidative degradation that is connected with decrease in mechanical properties including the wear resistance. Therefore manufacturers started develop new sterilization techniques. Extent of oxidative degradation can be estimated by infrared spectroscopy (IR). Concentration of residual radicals, which cause oxidative degradation, can be assessed by electron spin resonance (ESR). In this study, we investigated differences between UHMWPE samples sterilized by gamma irradiation, ethylen oxide gas and explanted cups. UHMWPE was sterilized by gamma radiation (25 kGy) and by ethylene oxide gas. Samples were kept in low-oxygen atmosphere. Gamma-sterilized samples were 0, 1 and 5 years old, whereas EtO-sterilized samples were 0 and 1 year old. We collect 5 explanted inserts taken during revision surgery. Oxidation indexes were calculated from IR spectra. Concentrations of residual radicals were determined from ESR spectra. The results of IR and ESR measurements: 1. ESR spectra confirmed that one of the products of gamma-sterilization are residual radicals, whereas during EtO-sterilization the residual radicals were not found. 2. Quantitative analysis of ESR spectra proved that residual radicals can survive in UHMWPE as long as several years, causing long-term oxidative degradation. 3. Oxidative indexes from IR spectra showed much higher oxidative degradation in gamma-sterilized samples, which increased with time. 4. Trans-vinylene indexes from IR spectra indicated that gamma-sterilization leads not only to oxidative degradation, but also to moderate crosslinking of UHMWPE. Supported by grant MSMTTCR2B06096

**Poster**

**Session: Arthroplasty - Hip**

**Abstract number: 22580**

**HIP RESURFACING - OUR EARLY EXPERIENCES UPON 25 CASES**

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For young and active patients the hip resurfacing could be a reasonable method. In our century the 3rd generation of hip resurfacing has spread worldwide. Until now more than 100.000 implantations have been performed. We have performed the 1st hip resurfacing in Hungary in October 2005. Since the 1st, we have implanted further more 24 resurfacing hips. We have investigated the operated patients comparing with the cement less hip patients of our department. We have performed the examination clinically and based on the Harris-hip score. The average flexion of the operated hip was 90 or rather 100, and the abduction 30 or rather 40 degree. The Harris hip score has increased from 53 to 78-ra, or rather from 53 to 82. The hip resurfacing based upon on our results, is a good possibility for young and active patients during a hip replacement, and the revision possibilities are much better, because of the bone conservation technique.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 19389**

**EARLY CLINICAL RESULTS OF TOTAL KNEE ARTHROPLASTY BETWEEN CT-BASED, CT-FREE NAVIGATION AND CONVENTIONAL TECHNIQUE**

Kenji FUKUNAGA, Yukihide MINODA, Hiroyoshi IWAKI, Mitsuhiko IKEBUCHI, Tesshu IKAWA, Takahiro IIDA, Takuya UEMURA, Yusuke HASHIMOTO, Kunio TAKAOKA

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**PURPOSE:** There have been few reports on the clinical results of TKA using navigation systems. This study was to compare the clinical results between navigation systems and conventional technique TKA. **MATERIALS AND METHODS:** We reviewed 114 TKAs (88 patients) performed by a single surgeon using a modern mobile-bearing PS TKA (PFC Sigma RP, DePuy). 30 knees (Group A) were operated with a conventional technique, 27 knees (Group B) with CT-based navigation system, and 57 knees (Group C) with CT-free navigation system. Clinical and radiological results were evaluated at minimum two-year follow up. **RESULTS:** Outliers (>3 degrees) in coronal mechanical axis were significantly less in Group B and C (15% and 7 %) than in Group A (33%). Outliers (>3 degrees) in sagittal prosthetic alignment were also less in Group B and C. The difference of preoperative KSS and range of motion (ROM) was not significant between three groups. The difference of the mean postoperative ROM was not significant between three groups (119 degrees in Group A, 121 degrees in Group B, and 121 degrees in Group C). The mean KSS knee score was 94.3, 94.3, and 92.5 points and KSS function score was 83.7, 79.4, and 80.7 points in Group A, B, and C ( $p>0.05$ ). **CONCLUSION:** Computer assisted TKA reduced outliers of mechanical alignment compared with the conventional technique. However, there was no statistical difference in ROM and clinical scores. To assess the potential benefits using navigation systems, we might require further investigation.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 19390**

**INFLUENCE OF POSTERIOR CONDYLAR OFFSET ON MAXIMUM KNEE FLEXION AFTER A MODERN MOBILE-BEARING PS TYPE TOTAL KNEE ARTHROPLASTY**

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**INTRODUCTION;** Concept of posterior condylar offset and the importance of its restoration on the maximum range of knee flexion after cruciate-retaining total knee arthroplasty (TKA) has been reported. However, there have been no reports on the relationship between PCO and knee flexion angle in modern mobile-bearing posterior-stabilized TKAs. We analyzed the relationship in a modern mobile-bearing PS TKA (PFC Sigma RP, DePuy). **MATERIALS and METHODS:** 113 TKAs (86 patients, mean age was 71.0 years old) were performed by a single surgeon using the same implant and a standardised operating technique. In all the patients pre- and post-operative lateral radiographs had been taken. We measured the knee flexion angle and the difference in the PCO before and two years after the operation. **RESULTS:** The mean pre- and post-operative PCO was 27.9mm (19.2 to 39.0 mm) and 28.5mm (17.4 to 35.2 mm), respectively. The mean increase in PCO was +0.65mm (-7.05 to 8.68 mm). The mean knee flexion was 118° (95° to 140°) preoperatively and was 124° (100° to 140°) two year-postoperatively. There was no statistical correlation between the change in maximum knee flexion and the increase in PCO (Pearson correlation coefficient  $r = -0.054$ ,  $p = 0.572$ ). **DISCUSSION:** Our study did not show the significant correlation between PCO and knee flexion angle in a mobile-bearing posterior stabilized TKA.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 19513**

**SINGLE RADIUS KNEE DESIGN! ARE THEY BETTER THAN CONVENTIONAL MULTI-RADIUS**

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The rotational axis of the knee is thought to move within the femur during flexion in an elliptical or J shaped curve which has lead to the development of multi axial total knee design. In contrast other authors argue that there is in fact a single axis of flexion extension and the centre of rotation of knee remains constant. The influence of this knee implant design on range of motion, rehabilitation, anterior knee pain and functional outcome is not well established. This is a prospective randomised clinical trial comparing two group of patients. Group 1 (n=41) patients were implanted with total knee prosthesis having single axis design and group 2(n=41) patients having multi axis design. At 6 weeks, 3 months, 6 months and 1 year the average postoperative flexion in-group 1 (105.2, 115.5, 118.3 and 120.3) was significantly better as compared to group 2 (95.4, 100.2, 110.2 and 115.1) with  $P < 0.01$ . At 1 year follow up group 1 had better range of motion than group 2 ( $P < 0.01$ ). Knee Society scores and WOMAC scores were significantly better in patients with single axis knee as compared to multi-axis knee but there was no difference in anterior knee pain. Single axial knee design offers early increase range of motion and rehabilitation with better clinical scores but does not offer any statistically significant improvement with anterior knee pain at the end of one year.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 20310**

**LONG TERM RESULTS AFTER KNEE ARTHROPLASTY**

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PURPOSE: Knee arthroplasty represents one of the increasing-in- frequency types of surgery, since the age of the people is increasing, together with their expectations from the quality of life. MATERIAL and METHOD: The author analyses 85 cases of knee arthroplasties, performed between 1.01.2003-1.06.2008 for unilateral (57 patients) and bilateral (14 patients) bi- and tricompartmental arthritis of the knee. The cases are analysed from the point of view of: knee function, radiological result, local and general complications. RESULTS: The functional results were excellent and very good in 85 % of the cases, fair and poor in 15 % of the cases. The radiological evaluation showed the restoration of the anatomical axis in 85% of the cases. Local complications were mainly septic (3%) and DVT (3%). CONCLUSIONS: The accuracy of the surgical technique is very important and axis restoration is mandatory in order to obtain good results. Failure are very difficult tolerated, due to the special situation of the knee joint.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 20441**

**PATELLOFEMORAL ARTHROPLASTY RESULTS ARE IN RELATION WITH ROTATION OF THE FEMORAL COMPONENT**

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Maltracking or subluxation is one of the complications of patellofemoral arthroplasty (PFA). A pre-operative and post-operative CT scan was performed since 1978 in our center for all the patients with PFA. A total of 124 patients (149 knees) were treated with PFA from 1978 to 2003. There were 39 men and 85 women who had a mean age of 64 years (range, 46 to 78 years). At a mean follow up of 13 years (range, 4 to 30 years), overall prosthetic survival and preservation was 91 per cent. There were 112 knees (75 per cent) with good or excellent clinical results (Knee Society score of 80 points or more). Revision to total knee replacement for femoro-tibial disease progression was necessary in 9 knees (6 per cent). Complications related to the patellofemoral arthroplasty (28 knees) included: residual pain or mechanical symptom 10 (7 per cent) requiring other ancillary procedures; maltracking or subluxation 18 (12%) with component revision in 10 knees; Radiographic findings show 2 component loosening and 1 patella fracture. There was no incidence of infection or component wear. The group with patellofemoral complications had excessive ( $p$  less than 0.01) combined femoral internal component rotation. This excessive combined internal rotation was directly proportional to the severity of the patellofemoral complication. The femoral component of the group (112 knees) with good clinical results and without complications was in external rotation (10-0 degrees).

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 20495**

**EARLY RESULTS OF HIGH FLEXION TKA**

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**INTRODUCTION:** In some countries deep flexion of the knee is necessary for daily activities. **METHODS:** In this prospective study we had 22 patients to whom 22 arthroplasties are done using NexGen LPS-Flex (Zimmer, Warsaw, Indiana, USA). We had 9 males and 13 females, age ranged from 50-76 with mean of 59.3. 9 patients received fixed bearing, 13 mobile bearing. Age mean for the fixed bearing was 61.6 and 57.8 for the mobile bearing group. We used the Knee society scoring system for assessment. Followup range 12: 26 months but 12 months follow visit considered the final. **RESULTS:** Preoperative range of motion improved from a mean of 122.27 to 136.882, knee score from 39.36 to 88.09 Functional knee score from 31.86 to 91.27 All this was found to be statistically significant. We had excellent result for the total score with mean of 89.75. We found differences in the results between the fixed bearing and mobile bearing design; preoperative range of motion mean was similar 122.8 to 121.9 Fixed to mobile, post operative range of motion 133.9 to 138.85 and this was not statistically significant, knee score 85.2 to 90.1, functional score 86.6 to 94.54 and total score was 86.1 to 92.31 and all statistically significant may be due to the difference in the mean age between the two groups. **CONCLUSION:** excellent early results for high flexion TKA

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 20582**

**ADVANCEMENTS IN 3D IMAGING TO AID IN RECONSTRUCTIVE SURGERY OF THE KNEE**

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The quality of medical diagnosis and surgical treatment related to joint pathologies has improved significantly by exploiting computer-aided intervention and biomedical simulations for accurate diagnosis and surgical planning. Computer-assisted techniques for knee surgery have previously been shown to provide increased accuracy and/or precision. However, because of the additional technical challenges and major investment costs, these computer-assisted surgical techniques are not widely available for clinical use. This paper describes the use of individual templates as an easy-to-use and cost-effective alternative to virtual planning and computer-aided applications around the knee. Human joint simulations usually start by reconstructing three-dimensional (3D) meshes of the joint tissues (bones, cartilages, etc.) from CT or MRI images. The principle of individual templates is to customize surgical templates based on these 3D reconstructions of patient-specific morphology. After a virtual plan is made in a patient's specific 3D environment, the surgical plan can be transferred into the operating theatre by means of a surface-matched drilling template, created using rapid prototyping technology. Two surgical examples around the knee are presented: total knee arthroplasty and corrective osteotomies of the knee.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 20995**

**INDICATIONS OF THE MASSIVE PROSTHESES IN THE TREATMENT OF BONES TUMORS EXPLORATORY RESULTS BY THE WAY OF 10 CASES**

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**INTRODUCTION:** The massive prostheses with hinge appeared in years 1960 to answer at a demand of deterioration of the knee but the big frequency of complications and the birth of other prostheses not sacrificing ligaments made them quit for osteoarthritises and they don't keep indications only in reconstructions of the knee after resection of tumors or in the big destructions with major instability for these cases we achieved replacements by the massive prostheses. **MATERIALS AND METHODS:** from June 2008 to February 2009 we achieved 10 massive prostheses at patients of Sexe male 08 Cases, Female 02 cases Age from 13 to 40 years old. Middle age of 26,6 years locate knee 09 cases and femur 01 cases proximal femur 1 case distal femur 6 cases proximal tibia 1 3 cases. Anatomy pathology Giant cells tumors: 3 cases Osteosarcomas 3 cases Sarcomas of EWING 1 case Chondrosarcomas 2 cases Synovitis 1 case. **OPERATIVE TECHNIQUE & APPROACH:** 2 approaches, medial and lateral, to avoid the cutaneous detachments and necrosis Resection. On average of 15 cm length Reconstruction posing problems of reinsertion of the patellar tendon for resections of tibia proximal that were achieved on the medial gastrocnemien covering the prosthesis. **RESULTS:** from June 2008 to September 2009 Middle of 11,4 months. Complications, immediate reoperations, 2 cases for hematomas, Assessment that will be exposed Clinic: Pain mobility stability according to the GUEPAR quotation Radiological: on the loosening and the recurrence of tumors

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21081**

**FLEXION BALANCE WOULD NOT BE MAINTAINED IN TOTAL KNEE ARTHROPLASTY**

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**PURPOSE:** To investigate the change of Flexion Balance (FB) in Total Knee Arthroplasty (TKA). **MATERIALS & METHODS:** The subjects were composed of 83 knees (4 males & 79 females, Ave.74 years) in our hospital (Jan 06 ~ Dec 07). Extension Balance (EB) and intra-operative FB (IFB) were measured with a seesaw-type tensor. Post-operative Flexion Balance (PFB) was evaluated with Kanekasus Epicondylar view at least more than 6 months postoperatively. Pre-operative Femoro-Tibial Angle (FTA), Change of FB (CFB=PFB-IFB) and Correction Angle (CA=FTA-174-EB) were calculated. The correlation between IFB & PFB, CFB & CA were examined. In the well-balanced group (IFB  $\leq \pm 2^\circ$ ), same analyses were done. **RESULTS:** In all subjects (n=83); EB:  $2.74 \pm 2.74^\circ$ ; IFB:  $1.61 \pm 3.67^\circ$ ; PFB:  $1.73 \pm 2.66^\circ$ ; CFB:  $0.01 \pm 4.25^\circ$ ; FTA:  $185.3 \pm 6.7^\circ$ ; CA:  $8.65 \pm 6.52^\circ$ , respectively. Though IFB did not correlate with PFB ( $r = -0.09$ ,  $p = 0.57$ ), CFB correlated with CA ( $r = 0.40$ ,  $p < 0.01$ ). In the well-balanced group (n=43); EB:  $3.09 \pm 2.71^\circ$ ; IFB:  $0.70 \pm 1.30^\circ$ ; PFB:  $1.22 \pm 2.52^\circ$ ; CFB:  $0.57 \pm 2.3^\circ$ ; FTA:  $185.5 \pm 6.5^\circ$ ; CA:  $8.42 \pm 6.09^\circ$ , respectively. IFB correlated with PFB ( $r = 0.41$ ,  $p < 0.01$ ). **DISCUSSIONS:** Same rectangular balance, though it is difficult to obtain, has been thought to be ideal in TKA. Even though good EB is achieved, IFB does not always prove to be well. Furthermore, post-operative change of FB has not been clarified though EB correlated with post-operative instability according to our past research. Our study demonstrated that IFB correlated with PFB only in the well balanced knees and that CFB correlated with CA. That's why we should try to control balancing well during surgery.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21083**

**THE EFFECTS OF FEMORAL COMPONENT ROTATION ON FLEXION BALANCE IN TOTAL KNEE ARTHROPLASTY**

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**PURPOSE:** To investigate the relationship between femoral component rotation and Flexion Balance in Total Knee Arthroplasty (TKA). **MATERIALS & METHODS:** The subjects of this research were composed of 101 knees with TKA in our hospital between July 2007 and December 2008. Intra-operative Extension & Flexion Balance (EB & FB) was measured with a seesaw type tensor. Pre-operatively, as anatomical references, posterior condylar line, clinical & surgical epicondylar axes were detected, Condylar Twist Angle (CTA) and Posterior Condylar Angle (PCA) were measured with CT & Epicondylar view (reported by Kanekasu). Post-operatively, Lift-off angle (LOA; angle between distal end of femoral component and proximal tibia), CTA and PCA were measured with Epicondylar view. The subjects were divided into 2 groups (Group S: LOA ≤ 1°, Group U: ≥ 5°). Each data was used to statistically analyze. **RESULTS:** In all, FB: 0.86 ± 4.88°, CTA: 3.39 ± 2.22°, PCA: 0.54 ± 2.03°, LOA: 2.30 ± 2.35°, respectively. In Group S, FB: -0.67 ± 4.85°, CTA: 2.94 ± 2.37°, PCA: 0.06 ± 1.91°, respectively. In Group U, FB: 3.07 ± 4.39°, CTA: 4.55 ± 1.65°, PCA: 1.80 ± 1.07°, respectively. There were statistical differences in FB, CTA and PCA (p=0.0156, 0.0012, 0.0062) between groups. In addition, in the case of FB=0°, LOA averaged 1.75 ± 2.39°. **DISCUSSIONS:** Our study demonstrated that post-operative flexion instability had been influenced not only by FB but also femoral component rotation, and that FB would not be maintained but converged approximately 2° post-operatively. These phenomena might be natural. Though it has been emphasized to control femoral component rotation, a little post-operative varus flexion instability would be inevitable because of physiological lateral joint laxity.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21400**

**REPLACING SEVERELY VARUS KNEES IN RURAL INDIA, USING EXTENSIVE MEDIAL RELEASES AND WIDER FEMORAL CUTS TO PREVENT USE OF WEDGES AND EXTENDERS**

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The numbers of knee replacements in rural India has jumped in the last few years. This is due to increased life expectancy and body weight, affordability and availability of services and skills. One common problem is severely varus knees. In our series of 100 consecutive TKRs done over 5 years we located 20 knees in 12 patients, which had > 20 degrees of varus deformity and FFD>10 degrees. Lateral ligament attenuation and subluxation of the joint was also noted. Most patients had painful unstable knees and were barely mobile. 11 patients were male. The mean age was 69.5 years. Pre-operative templates were used to determine size in all cases. Two types of prosthesis, the PCL stabilising versions of the sigma PFC or the Biomet AGC were used. Extensive release of soft tissue overlying the medial tibial plateau, both front and back, continued until the bone surface was bare and flexion and extension gaps of at least 10mm were obtained. Occasionally, the pes anserinus was also scraped down with a diathermy. The initial femoral cut was 11 mm in most cases though the tibial cut was conservative to preserve the height of the joint line. Cementoplasty and bone grafting was done occasionally cases but wedges and extenders were not required. Patellar replacement was done in 4 patients and lateral releases in none. All patients were restored to a painless mobile knee with average flexion of 100 degrees and were able to walk independently of walking aids and return to ADL.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21432**

**PREDICTION OF POSTOPERATIVE DEEP VEIN THROMBOSIS BY D-DIMER PLASMA MEASUREMENT IN PATIENTS UNDERGOING TOTAL KNEE ARTHROPLASTY**

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BACKGROUND: Despite the prophylaxis, deep vein thrombosis (DVT) still occurs frequently after elective knee surgery. Hence it would be helpful if the high risk of DVT patients could be identified before surgery, so we will be more aware and give them the adequate prophylaxis. A normal plasma D-dimer level effectively rules out acute DVT patients, who classified as having low clinical probability. In many studies, there was one of coagulation activation markers that were measured to observe role in preoperative prediction of DVT after major hip or knee surgery. In this study, the preoperative plasma level of D-dimer in patients undergoing total knee arthroplasty (TKA) was collected, and correlated it with the results of postoperative venography.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21434**

**POSTOPERATIVE BLOOD LOSS OF COMPUTER NAVIGATED MINI-INCISION SUBVASTUS APPROACH TKA (CMS-TKA) WITH AND WITHOUT TRANXAMINE**

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**BACKGROUND:** Various surgical techniques are developed for blood saving in TKA. Blood loss from total knee arthroplasty can be reduced by MIS and from MIS-CAS can reduce blood loss after TKA. Tranxamine is an antifibrinolytic agent which common reduced blood loss. No any study about combination tranxamine and (CMS-TKA) have been described. The purpose of the study is to evaluate the potential benefite of blood saving in CMS-TKA and tranxamine. **MATERIALS AND METHODS:** Prospective, randomized double-blind of 80 TKA patitents were enrolled in our study. 80 CMS-TKA are randomized in 2 group. Group1 (CMS-TKA) with traxamine and group2 (CMS-TKA) without tranxamine. In group1 preoperative Tranxamine 750 mg was admistrated 15 minutes before surgery, and second dose was repeated after three hours. Oral tranxamine was prescribed till post op day 3. All introoprative and post operative blood loss, Hct, Radivac drainage, were record till 3 day post operative. **RESULTS:** The mean preoperative Hct in group1: group 2 is 37.44(35.91-38.97):36.81(37.08-33.54). The mean postoperative Hct in group1:group2 is 32.22(31.21-33.23): 27.65(26.38-28.92). The mean drainage of blood loss (cc) in group1: group2 is 212cc (180-244): 504 cc (436.37-572,73). This different were statistically significant (p-value = 0.0001) Blood replacement (PRC) group 1: 2/40 and group2: 15/40. No DVT, major complication and adverse effect of Tranxamine. **CONCLUSIONS:** The (CMS-TKA) with traxamine injection can reduced blood loss and blood transfusion significantly in TKA.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21439**

**EVALUATION OF GASTROINTESTINAL AND CARDIOVASCULAR RISK OF NON-SELECTIVE NSAIDS AND COX-2 INHIBITORS IN ELDERLY PATIENTS WITH KNEE OSTEOARTHRITIS: AN EPIDEMIOLOGY STUDY**

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**BACKGROUND:** Coxibs are approved for the relief of acute and chronic pain. In an aging population with multiple co-morbidities have not been established. **OBJECTIVE:** To evaluate the incidence and risk profiles for GI and CV risk in nonselective NSAID and coxib users in oa knee > 60 years. **METHOD:** A retrospective cohort study was applied. Data on (NSAIDs, celecoxib, etoricoxib) was obtained. Data on CV and GI adverse events were obtained since June 2004-2007 inclusion criteria  $\geq$  60 years, fu >12 months. **RESULTS:** A 1,030 patients, mean age 69.6 years. A total of 78 gastrointestinal events occurred. GI events included gastritis (50, 64.1%), gastric ulcer (14, 17.9%), duodenal ulcer (3, 3.8%), and normal (11, 14.1%). 40 to NSAIDs, 21 to celecoxib and 17 to etoricoxib. 49 CV events, CHF (29), angina pectoris (15), MI (5) by logistic regression analysis, patients who received celecoxib were significantly less likely to have GI events than those who received NSAIDs; HR = 0.36 (95% CI 0.21-0.63, p = 0.00.). Using gastroprotective agents could reduce GI risks associated with all drug groups by approximately 51%. For CV event, there were only 3 significantly associated with CV events - female, age >80 years, and drug exposure time (HR =1.05, p =0.00). **CONCLUSION:** Incidence of GI and CV events was lower for coxibs than for NSAIDs old age and drug exposure time had an increased GI risks; gastroprotective agents significantly decreased GI risks; female, advanced age.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21447**

**RESULT OF COMPUTER ASSISTED AND MINI-INCISION SUBVASTUS APPROACH TOTAL KNEE ARTHROPLASTY**

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Several MIS have evolved from the standard medial parapatella approach. MIS subvastus approach is to reduced blood loss, reduced morbidity, pain, self rehabilitation and faster recovery. The combination of (CMS-TKA) has been developed to improve outcomes and reduce the risk. The purpose of this study is to evaluate the outcomes of combination of (CMS-TKA). MATERIAL AND METHOD: A study of the initial 80 patients who (CMS-TKA) for OA of the knee from January 2007 to June 2008. All patients' data was collected by prospectively. INCLUSION CRITERIA: OA with varus deformity include flexion contractor, bone loss, severe varus deformity, no limitation of BMI. EXCLUSION CRITERIA: Severe valgus deformity type 3. SURGICAL TECHNIQUE: Patient setup; Mini-incision subvastus approach; Registration; Navigation Software setup; Tibial, Femur Surface Mapping; Bone cut and alignment check; Trial reduction and Ligament balancing; Patelloplasty; Cementation; Final analysis of implanted MIS TKR. RESULT: Incision length was 10 (9-11 cm); Blood loss in 24 hours was 504 (436.37-572.73) cc; blood transfusion was 3-4 unit; Operative time and Tournique time was 124.15 (120.12-131.18) and 112.8 (105.77-119.83); TF angle outlier within 3 was 85%; ROM of 0-90 (75-105) and WOMAC and KSS was improved. No DVT, infection 2 case, No fracture, vascular injury, No pin tract complication. CONCLUSION: The CMS-TKA technique in have a multiple key steps to improve surgical outcomes and alignment of the TKA. In this technique no limitation of BMI and type of deformity has been demonstrated.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21471**

**PHYSICAL ASSESSMENT OF FUNCTION DIFFERS FROM PATIENT REPORTED OUTCOME FOLLOWING TOTAL KNEE ARTHROPLASTY**

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**INTRODUCTION:** Increasingly Patient Reported Outcome Measures (PROMS) are used to assess function following total knee arthroplasty (TKA). It is assumed that these measures accurately reflect the patients' pain and physical function. Limited evidence is emerging however that this may not be the case. We hypothesised that a physical examination of patient function would correlate strongly with patient self-report questionnaires following TKA. **METHODS:** Consecutive patients listed for TKA were assessed pre-operatively, and at 8 and 26 weeks post-operation. The Oxford Knee Score (OKS) and the physical function score (PCS) of the Short Form-36 were utilised as self report outcomes. Direct measurement of leg strength was assessed (Leg extensor Power Rig TM). Timed assessment of functional tasks was performed (Automated Locomotor Function, ALF). Pain scores were recorded by numerical rating scale. **RESULTS:** All the individual measures showed statistically significant improvement between each of the assessment periods (paired sample t-test,  $p < 0.05$ ). The PROMS however were found to correlate poorly to the physical assessments. The OKS correlated poorly with the ALF, ( $r = < 0.5$ ) and with leg strength ( $r = < 0.3$ ). The PCS correlated poorly with ALF ( $r = < 0.2$ ) and with leg strength ( $r = 0.34$ ). **CONCLUSIONS:** These results suggest that PROMS do not fully represent actual physical function following TKA. With the advancement of PROMS in the literature, it is important to recognise that the assessment they provide may be incomplete. A larger study would be beneficial to assess this issue fully.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21484**

**ASSESSMENT OF RADIOLUCENT LINE AFTER CEMENTLESS TOTAL KNEE ARTHROPLASTY WITH TWO DIFFERENT IMPLANTS**

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**INTRODUCTION:** Early postoperative radiolucent line (RLL) sometimes appears after cementless total knee arthroplasty (TKA) because of micromotion of the implant. We assessed the course of the appearance of the RLL in knees with two different implants in a period of over five years. **PATIENTS AND METHODS:** Sixty-four knees of 59 patients, who underwent primary cementless TKA, were evaluated. The 34 knees were implanted with Scorpio (Striker), and the 30 knees were implanted with Advance (Wright Medical). We periodically investigated the incidences and sizes of the RLLs in both Scorpio and Advance. The minimum follow-up period was 63 months. **RESULTS:** Around the femoral components, the RLLs appeared in 3 of the 34 knees with Scorpio and in 10 of the 30 knees with Advance. Around the tibial components, the RLLs appeared in 5 of the 34 knees with Scorpio and in 14 of the 30 knees with Advance. Around both the femoral and tibial components, the incidences of the RLLs in Scorpio were significantly lower than those in Advance ( $p=0.027$  and  $0.007$  around the femoral and tibial components, respectively). In both Scorpio and Advance, all of the RLLs were non-progressive, and all of their maximum widths were less than 3 mm during the follow-up period. **CONCLUSIONS:** Hydroxyapatite-coating of Scorpio is probably related to the significantly low incidence of the RLL. Incidentally, in knees with the non-progressive RLL after cementless TKA, acceptable fixation of the implant is probably obtained because of partial bone ingrowth and fibrous fixation.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21537**

**CAUSATIVE FACTORS FOR PIN TRACT FRACTURE IN NAVIGATED TKA**

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This retrospective radiographic analysis of 57 patients (62 knees) studied 2 possible causative factors in pin tract fracture of the femur, in navigated TKAs (Sorrpio NGR, Stryker), i.e. angle of tracker pin with the respect to the lateral femoral cortex, and the distance between the tracker pin to lateral joint line. There was a significant relationship between post-operative pin tract induced stress fracture (3 patients), with pin tract angles exceeding 15° (p<0.01). There was no significant relationship between risk of fracture and distance of tracker pin to lateral joint line. These findings will help to improve the understanding of pin tract induced femoral fractures in TKA and avoidance of this complication. Keywords: Computer assisted surgery, total knee arthroplasty, stress fracture.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21553**

**PRESSURE DISTRIBUTION ON PATELLOFEMORAL JOINT OF KNEE PROSTHESIS**

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Many researches including kinetic analyses and mechanical characteristics analyses of knee prostheses have been reported. As far as we know, there is no report that succeeded in showing quantitative load data on patello-femoral joint. In this study, we quantitatively measured pressure and its distribution on patello-femoral joint by utilizing pressure instrumentation. **MATERIALS AND METHODS:** We reviewed three TKA cases for this study. We used Wright Medical Technologys ADVANCE total knee system. Having sixteen pressure-sensitive rubbers attached on the patellofemoral joint interface, we measured load value and barycentric position. We proceeded to examine load value and any possible changes in position of the center of pressure between the patella and the femur while performing knee flexions and extensions five times total. **RESULTS:** The result of load value and the change (distribution) in barycentric position showed a certain level of correlation. Barycentric position moved as the knee flexed from extension. The center of load moved from distal lateral to proximal medial of the knee joint. More specifically, mean shifting distance was 5.1 mm in a transverse direction and 5.3 mm in a longitudinal direction. Besides, total load value increased proportionately with flexion, and it showed maximum value of 4000 gf at 90 degrees flexion. I hope that in the future I would be able to talk about potential idea for the design of knee prosthesis based on all the various data from the studies.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21617**

**SILENT CARDIAC CO-MORBIDITIES IN JOINT REPLACEMENT PATIENTS: A CAUSE FOR CONCERN?**

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We studied the case records of 109 patients who underwent dobutamine stress echocardiography (DSE) as pre-operative cardiac risk assessment for primary hip and knee replacement surgery. 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 ( $p=0.00$ ). Univariate analysis of the data showed that a DSE test has a positive predictive value of 16.67 for ischaemia. However, our analysis also showed a high negative predictive value of 97.85% for ischaemia. DSE test helps to identify patients with silent cardiac co-morbidities. We believe that identifying these patients and treating them before joint replacement can improve the outcome significantly.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21657**

**MANAGEMENT OF ISOLATED PATELLOFEMORAL OSTEOARTHRITIS WITH FACETTED DESIGNED PATELLOFEMORAL REPLACEMENT - EARLY EXPERIENCES**

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**INTRODUCTION:** The isolated patellofemoral arthroplasty has not gained high popularity because of the high failure rate of the early designs. The main reasons of failure were the progressing femorotibial osteoarthritis and the patellofemoral malalignment. Promising short term results with faceted designed prosthesis are presented. **MATERIALS AND METHODS:** 10 patellofemoral replacement (male/female: 1/9, age: 57 (38-69) years) were carried out at our department from 01.04.2008 till 01.02.2009. Isolated patellofemoral osteoarthritis was confirmed by arthroscopy in all cases. Patellofemoral dysplasia was noticed in 5 cases. 5 had idiopathic osteoarthritis. FPV Evos® (Wright Medical Ltd) faceted designed cemented prosthesis was used. This prosthesis has steeper and longer lateral trochlea with 140° coronal angle and an asymmetrically faceted oval patella, consequently providing better patellar tracking. **RESULTS:** In our series no infection, no thrombosis/embolism occurred, no transfusion was necessary. At 6 (2-10) months postoperatively average 125° (115-140) flexion was achieved, no lateral subluxation was observed. 2 patients reported residual anterior knee pain. The median Oxford score improved from preoperative 18 to 30 at 6 weeks and to 38 at 6 months postoperatively. No revision has been necessary so far. 9/10 patients are satisfied with the outcome. **CONCLUSION:** Although only early experiences are presented, the faceted designed prosthesis shows promising short term results. The maltracking related complications appear to be significantly reduced. Therefore the faceted designed patellofemoral replacement with appropriate patient selection and precise surgical technique seems to be a good alternative in management of advanced isolated patellofemoral osteoarthritis.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21690**

**GAIT ANALYSIS FOLLOWING CONTRALATERAL TOTAL KNEE REPLACEMENT FOR BILATERAL KNEE OSTEOARTHRITIS**

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There is a controversy whether performing TKA on both knees simultaneously is appropriate in treating patients with bilateral knee osteoarthritis. In this study, we reviewed the significance of performing simultaneous bilateral TKA, by the results of preoperative and postoperative gait analysis. **MATERIALS AND METHODS:** Total of eleven patients of bilateral knee osteoarthritis, were treated with TKA. For prosthesis, we used Scorpio NRG PS, and ADVANCE. We examined distance factors, gait velocity, and gait barycentric factors. We performed the analysis preoperatively, postoperatively at 1 month, 3 months, and 6 months. We used the floor pressure gauge and the three-dimensional motion analysis device for the analysis. **RESULTS:** During the six-month follow-ups, six cases were unilateral TKA and five were treated bilaterally. Increase in step length was seen in 10 cases, and one case decreased in the bilateral cases. Step width decreased in 6 cases, 3 cases showed no change, and increased in 2 cases. Gait velocity had increased in 10 cases, and one case decreased in the bilateral cases. Single-support phase was close to 1 for all the cases in the unilateral cases. Ratio of center of gravity maximum values, which indicates the movement of centroid during ambulation, the ratio went up for unilateral cases while it showed no change in the bilateral cases. **DISCUSSION:** Among the gait analysis factors, we consider that Ratio of center of gravity maximum values shows effectively the improvement of the treated knee, gait, and the condition of contralateral knee.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21714**

**THE RELATIONSHIP OF ANTEROPOSTERIOR, TRANSEPICONDYLAR AND POSTERIOR CONDYLAR AXIS OF THE FEMUR: A CADAVERIC STUDY**

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**OBJECTIVE:** To study the normal relationship of the anteroposterior (AP), transepicondylar (TE) and posterior condylar (PC) axis of cadaveric femoral bones using digital technology and special computer program. **MATERIAL AND METHOD:** Digital image of distal femur of 100 cadaveric bones of both sides and both sex were taken using special stand and clamp to ensure the same view and same distance from bone to camera. All still images were transferred into a specially developed computer program, then reference points were located by two observers, and was done twice at one week interval. The program reported the angle between AP-TE, AP-PC and TE-PC axes automatically. The data was then analysed. **RESULTS:** The age of donor of cadaveric bones range 22 to 58 years (average 45.61 - 7.73). The AP-TE, AP-PC and TE-PC angles are 92.43 - 2.07, 86.65 - 1.85 and 5.79 - 1.26 degrees. The correlation coefficients of intraobserver reliability in observer 1 and observer 2 are 0.89, 0.87, 0.91 and 0.92, 0.90, 0.87. The correlation coefficients of interobserver reliability are 0.81, 0.82 and 0.80. Limit agreement test of AP-TE, AP-PC and TE-PC are 90.59%, 92.57% and 96.03%, in orderly. **CONCLUSION:** Using digital technology, the normal relationship of AP, TE and PC axes of femur from cadaveric bone could be more accurately studied comparing with the previous studies performing measurement on plain film, CT scan or MRI using goniometer.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21761**

**MINIMUM TEN YEAR RESULTS OF CEMENTLESS KNEE JOINT PROSTHESIS T.A.C.K.**

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**PURPOSE:** To evaluate the interim results of the 150 cementless knee joints prosthesis using T.A.C.K. Knee Prosthesis. **METHOD:** During December 1996 and March 1998, 150 total knee replacement procedures on 142 patients (8 bilateralpatients) with T.A.C.K. prosthesis (Link) were performed. There were 92 females and 58 males. 136 cases were OA, 14 were RA. The average age was 66.2 years (range 54,6 to 69,2). **RESULTS:** Patients were followed for an average of 10.6 years postoperative (maximum 12,6 years). 2 patients died during the course of this study. 5 patients were lost to follow-up, 6 cases were revised, and 129 patients were recently evaluated by x-ray and clinical exam. Clinical evaluations were conducted using the Knee Society score. Excellent result was achieved in 104 cases (78.8%), good in 16 cases (12,1%), satisfactory in 7 cases (6,1%). There was severe pain in the patellofemoral joint in 2 patients (3%), 6,2% incidence of radiolucent line in active cases measured from 2-4 mm. The causes for TKA-revision included: aseptic loosening (3%), pain (3%). **CONCLUSION:** Cementless fixation with T.A.C.K prosthesis was succesful in all femoral and 94% of the tibial component. We have seen excellent results using the T.A.C.K.knee system.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21788**

**THE FATE OF GENDER SPECIFIC PROSTHESIS IN TOTAL KNEE ARTHROPLASTY**

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**BACKGROUND:** Recently, gender specific (GS) knee prosthesis has been launched into the market and was proposed to match the morphology of female distal femur than that of male femur. However, the necessity of GS prosthesis is being debatable. **OBJECTIVE:** To evaluate the rate of GS knee prosthesis selection according to the bone morphology. **PATIENTS AND METHOD:** A prospective consecutive series of 314 unilateral TKAs were evaluated. Intraoperatively, the GS femoral component was selected if a medio-lateral overhanging of the trial component was demonstrated; otherwise the standard femoral prosthesis was selected. Patients' demographics, number of each femoral size and GS implant were evaluated and compared between genders. **RESULTS:** There were 49 males and 265 females. The average patients' age was 70 years with no difference between genders. The GS femoral component was used in 8.2% of male patients and 60.8% of female patients with significant difference ( $p < 0.0001$ ). The percentage of GS prosthesis in female patients were 25% for size C, 53% for size D, 86% for size E, and 100% for size F, respectively. In male patients, only 4 knees had GS prosthesis including 2 for size D and 2 for size G. **DISCUSSION AND CONCLUSION:** TKA was more common in women than men. The use of GS prosthesis was significantly higher in women than men. In female knees, the larger femoral component was, the higher percentage of GS prosthesis was used. The GS knee prosthesis has role in female knee.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21798**

**COMBINATION OF CALCIUM HYDROXYAPATITE ANTIBIOTIC CARRIER (PEROSSAL<sup>®</sup>) WITH SPACERS IN PERIPROSTHETIC KNEE INFECTIONS**

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Cement spacers impregnated with antibiotics have been used to preserve the joint space and to release antibiotics within the created dead space. However, problems related to cement as an antibiotic carrier are well recognised. Our purpose was to identify potential differences between cases submitted to conventional two stage revision arthroplasty vs cases treated with PerOssal as an antibiotic carrier. During 2004 to 2008, 46 patients with infected TKR were revised. In 31 patients (group A) spacers impregnated with antibiotics were used, whereas in 15 patients (group B) a combination of an articulating spacer and PerOssal as antibiotic carrier. All patients were reviewed with laboratory exams (WBC, ESR, CRP) every 7 days and joint fluid aspiration prior to re-implantation, at mean 8 months post 1st stage (range, 6 to 12 months). At a mean follow-up of 36 months no patient was lost or died. WBC count and ESR showed no statistically significant differences at any time interval ( $p > 0.05$ ). However, CRP values had a statistically significant difference between the two groups after the second week postoperatively ( $p_{3rd\ week} = 0.042$ ) and group B had significantly lower CRP values compared to group A thereafter ( $p_{4th\ week} = 0.038$ ,  $p_{5th\ week} = 0.031$ ,  $p_{6th\ week} = 0.034$ ). Re-infection rate was 16.12% in group A and 6.6% in group B ( $p = 0.192$ ). PerOssal is associated with more rapid reduction of CRP levels, probably due to greater porosity and better antibiotic delivery comparing to impregnated cement.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21852**

**BLOOD LOSS AFTER MINIMALLY INVASIVE TOTAL KNEE ARTHROPLASTY: COMPARISON BETWEEN PROCEDURES PERFORMED WITH AND WITHOUT ELECTROMAGNETIC COMPUTER NAVIGATION**

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**OBJECTIVE:** To compare the total blood loss after minimally invasive surgery total knee arthroplasty (MIS-TKA) between procedures performed with and without electromagnetic computer navigation. **MATERIAL AND METHODS:** Eighty patients with end-stage osteoarthritis who underwent MIS TKA were recruited for a cohort study. Forty patients, Group I, underwent MIS-TKA with computer-assisted procedure (CAS-MIS-TKA) and 40 patients, Group II, underwent MIS-TKA alone. All surgeries were carried out by a single surgeon using a uniform surgical approach and did not release tourniquet to stop bleeding. All patients had a single method postoperative management, including time to remove the drain. The visible blood loss, which is blood collected from drain, and total blood loss of both groups were evaluated and analyzed for the statistical difference. **RESULTS:** The mean ( $\pm$  standard deviation) blood collected from the drain of patients in Group I was slightly lower than that of Group II ( $389.88 \pm 215.57$  vs  $425.25 \pm 269.40$  milliliters) with no significant difference ( $p, 0.519$ ). Similarly, the total blood loss of patients in Group I was slightly lower than that of Group II ( $948.45 \pm 431.63$  vs  $1,075.32 \pm 419.02$  milliliters). The difference was also no statistically significant. **CONCLUSION:** Electromagnetic computer-assisted surgery did not reduced visible or total blood loss in minimal invasive total knee arthroplasty. **Keywords:** computer-assisted, CAS, electromagnetic, EM, minimally invasive, MIS, total knee arthroplasty, TKA, blood loss

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21946**

**TOTAL KNEE ARTHROPLASTY IN YOUNG PATIENTS - FIVE YEARS RESULTS**

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The number of patients suffering from gonarthrosis is growing. One of the most important and difficult problems is development of surgical treatment for degenerative conditions of the knee. The aim of investigation was the assessment of possibility and results of total knee arthroplasty (TKA) at young patients with the 3rd-4th stage of gonarthrosis. Carrying out this work we analyzed 39 cases of TKA at 39 patients operated in 2003-2007. The age of patients range between 19 and 45 years. The average monitoring period: 36,68 months. All patients were implanted bicondylary unconnected knee joint endoprosthesis 'Scorpio' (Stryker Corp., USA). All patients were divided into 2 group depends on cause of gonarthrosis (in addition each group were divided into 2 subgroup in depends on age of patients – under and above 30 years). The first group: 13 patients with posttraumatic gonarthrosis (15,4% cases were under 30 years, 84,6% were above 30 years). The second group: 26 patients with rheumatoid arthritis. Patients under 30 years were in 42,3% cases, above 30 years were in 57,7%. The results of TKA in young patient (under 45 years) with posttraumatic gonarthrosis and rheumatoid arthritis in 77% and in 96,2% cases were perfectly or good, and satisfactory in 15,4% and in 3,8% cases. Best result had appeared of patients under 30 years. Thus TKA is proved to be the most effective treatment for the 3rd – 4th stage of gonarthrosis in patients of younger groups.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21952**

**THERAPY OF OSTEOMYELITIS OF THE TIBIAL HEAD WITH V.A.C. AND SECONDARY TREATMENT WITH TOTAL KNEE ARTHROPLASTY**

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A 60 year old man with knee pain, swelling, effusion, redness and osteoarthritis of the knee was referred to the hospital. A knee puncture was done and germs were found. METHODS: Immediately after admission to the hospital an arthroscopy was proceeded. Unfortunately the knee joint presented a complete fibrotic tissue changed and the surgery was changed to an open knee operation. A synovectomy, pulsatile rinsing with Lavasept was done. A V.A.C. system was placed into the knee joint. In the further course the knee pain persisted. Further radiological investigation lead to a osteomyelitis of the tibial head and an abscess of the abdominal wall, bacteria were found on the heart valves. As further surgical treatment the abscess of the abdominal wall was drained and a tibiasototomy was performed. An antibiotic therapy was proceeded. We tried to treat the osteomyelitis with an aggressive debridement, pulsatile lavage and a vacuum assisted closure (V.A.C.) system. PUR foam was used and continuous suction applied. We left The V.A.C. system for 7 days in place and changed it tree times. RESULTS: Germ free environment, a closure of the wound with a muscular lobe was acchived. Further follow up investigation were proceeded. After normal laboratory values, normal MRI and scintigraph findings a total knee replacement was performed nine month later. After three years the patient does not show any sign of an infection or any disorders. CONCLUSIONS: The V.A.C. therapy seems to offer a treatment option of osteomyelitis.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 21979**

**A COMPARISON OF EARLY CLINICAL OUTCOME BETWEEN COMPUTER ASSISTED SURGERY TECHNIQUE AND CONVENTIONAL TECHNIQUE IN MINIMALLY INVASIVE TOTAL KNEE ARTHROPLASTY**

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Minimally invasive total knee arthroplasty (MIS-TKA) is becoming popular due to good early functional results. However, poor visualization could increase possibility of prosthesis mal-alignment, which may causes early failure. In August 2007, we started using Computer assisted surgery (CAS) combined with MIS-TKA in our institution. We retrospectively review our early experience of CAS MIS-TKA (CAS group) compared with conventional MIS-TKA (MIS group). RESULTS: From September 2007 to February 2008, there were 46 knees of 44 patients (mean age 63.9+/-7.3 years) in CAS group and 24 knees of 23 patients (mean age 68.7+/-9.8 years) in MIS group. All patients underwent TKA using Mini-Midvastus approach and single shot spinal anesthesia with morphine. There were no statistically significant in BMI, pre-operative deformity, mean operative time, tourniquet time, Visual analog pain scale on first and second day post-operative and total blood loss. Range of motion (ROM) of MIS group was significantly better than CAS group at all data point (range 8-9 degrees). There were no significant complications in both groups. However, the percentage of outlier (deviation >3 degrees) of bone cut in CAS group was 6.5% on both femur and tibia while outlier of MIS group was 16.6% on femur and 25% on tibia respectively. DISCUSSION: Our early experience in combining CAS with MIS TKA showed better control of coronal bone cut without significant increase of operative time or complications. The difference of ROM may be due to different prosthesis design in each group.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 22034**

**ROLE OF ISOTOPE BONE SCAN IN MANAGEMENT OF PAINFUL ARTHROPLASTY**

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AIM: Isotope bone scan has become a part of the routine workup for a painful arthroplasty. A retrospective analysis was performed to analyse the significance of isotope bone scan results in the management of painful arthroplasty. METHODS AND MATERIALS: The study group included all the 58 consecutive patients who underwent an isotope bone scan for a painful arthroplasty over a one year period. The data collected included: age, sex, date and nature of primary arthroplasty, inflammatory markers, indication, date and result of the bone scan, and the final outcome. RESULTS: The primary arthroplasty was a TKR (29 patients) and THR (29 patients). The average duration between primary arthroplasty and the bone scan was 44.3 months (Range 5-195 months). The duration was less than 1 year for 6 patients. The average age of the patients was 62 years. The male: female ratio was 31:27. 4 of the arthroplasties were uncemented and 54 were cemented. The bone scan results were normal in 32 patients, unclear in 17 patients and abnormal in 9 patients. DISCUSSION: The results of the bone scan made a significant contribution in the management decision of the patient in 8 of the patients and served to reassure the patient / surgeon in most of the rest 50. In 6 patients it was performed within a year of the primary arthroplasty, during which period the results are not very specific. Take home message: Always ask the million dollar question: Is it going to alter my management plan?

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 22217**

**THE USE OF A CALCIUM HYDROXYAPATITE ANTIBIOTIC CARRIER (PEROSSAL\*) AS A SPACER IN TWO-STAGE REVISION INFECTED ARTHROPLASTY**

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**INTRODUCTION:** Two-stage revision procedure is the gold standard in management of periprosthetic infections. Cement spacers have long been used to preserve the space created during resection procedure and to release antibiotics within the created dead space. However, the problems related to cement as an antibiotic carrier are well recognised (thermal necrosis, random porosity, unspecified antibiotic delivery rate). **PURPOSE:** To present the concept of using PerOssal as a canal filling spacer and local antibiotic delivery system in two-stage revisions of hip and knee infected arthroplasty. **MATERIALS & METHODS:** 8 patients (6 females, 2 males) with infected arthroplasty (4 TKRs, 4 THRs) were managed with two-stage revision procedures during the years 2006-2008 (minimum FU: 12 months). Our protocol consisted of: a) Preoperative determination of the causative organism b) Radical debridement surgery and cement spacer with PerOssal implantation c) Appropriate IV antibiotic therapy for 6 weeks, postoperative clinical evaluation and monitoring of inflammation markers d) After a six-week antibiotic free interval and inflammation markers normalization second stage surgery took place: Medullary canal reaming, intraoperative cultures, thorough wound irrigation and prostheses implantation e) Postoperative antibiotic therapy until culture results; IV antibiotic treatment for 6 more weeks if they were positive. f) FU evaluation at 3, 6, 12, and 24 months. **RESULTS:** We had 7 cases with eradication of infection, 2 with delayed wound closure, and 1 late recurrence of disease. **CONCLUSION:** We think that PerOssal can offer a very useful additional and genuine support in managing infected joint arthroplasties with so far good clinical results.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 22261**

**TOPICAL TRANEXAMIC ACID FOR REDUCTION BLOOD LOSS IN COMPUTER-ASSISTED TKA - A PRELIMINARY REPORT OF A PROSPECTIVE RCT**

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**OBJECTIVE:** To evaluate the effect of topical tranexamic acid application in primary computer-assisted total knee arthroplasty regarding to postoperative drainage blood loss (primary outcome), calculated total blood loss, blood transfusion rate, functional score, thromboembolic event and complications. **MATERIAL AND METHODS:** A prospective randomized controlled trial was started on September 2008, Blocked randomization generated by STATA program was made for 56 patients undergoing primary computer-assisted TKA in Ramathibodi hospital was performed as TXA group (Tranexamic acid 250 mg + normal saline 25 ml) and control group (Normal saline 25 ml). The drug was injected into knee joint after closing fascia layer, then a Redivac drain was clamped for 2 hours and released. Postoperative drainage blood loss, amount of received blood transfusion, hemoglobin level preoperative & postoperative day 4th, side effect and complication were recorded. All patients were sent to Doppler ultrasound for documented deep vein thrombosis on postoperative day 4th and functional outcome and complication was followed. **RESULTS:** Until September 2008 to present, the study included 15 patients (9 in TXA group, 6 in Control group). For TXA group, average postoperative drainage blood loss was 305.6 ml (60-610 ml). For Control group, average postoperative drainage blood loss were 588.3 ml (320-930 ml). Both groups were not received blood transfusion. No side effect include DVT were found. **CONCLUSION:** According to a preliminary report, TXA seemed to reduce blood loss when compared with the controls. A complete study would reveal the effect of topical tranexamic acid use in primary TKA operation.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 22337**

**RECURRENCE AND AGGRESSIVE BEHAVIOUR OF GIANT CELL TUMOUR: MANAGED BY MEGAPROSTHESIS**

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**INTRODUCTION:** Giant cell Tumour is common in 3rd and 4th decade it involves the epiphysio-metaphyseal region and the articular cartilage is barrier for the tumour to invade the joint. Usual presentation is pathological fracture. **PRESENTATION:** 24 year female presented with swelling of kneejoint following trivial trauma. X-ray showed fracture lateral femoral condyle with some osteolytic lesion. CT scan and MRI confirmed the lesion and curettage and acrylic cement was used to fill the defect. Histo-pathological examination reported as GCT. Follow up was done and 1year later X-ray showed recurrence involving the medial femoral condyle. MRI confirmed the lesion and similar procedure followed. Follow up done and in 2nd year X-ray showed lytic lesion over the operated lateral femoral condyle. Similar procedure was repeated and defect filled with cement. During these 2years patient had full knee bending. Following 9 months after the last surgery X-ray showed complete destruction of subchondral bone with articular involvement. Now the patient under went total knee replacement using Custom made Mega Prosthesis and 1year follow up shows knee bending 1000 with minimal pain while walking. **CONCLUSION:** As patients are usually young mobile knee joint is important. Curettage and filling the defect is standard treatment but recurrence rate is high which comes down if acrylic bone cement is used. Literature report less recurrence rate at 7 years follow up contradicting to our patient who had three recurrences in three year follow up. Finally when subchondral bone and articular surface involvement occurred and patient was advised replacement.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 22390**

**LYMPHEDEMA WITH PERIPROSTHETIC FRACTURE AFTER TKR-A DESPERATE SITUATION MANAGED WITH AN UNCONVENTIONAL BUT SIMPLE TREATMENT METHOD: A CASE REPORT**

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Total knee arthroplasty (TKR) in patients with lymphedema remains a surgical challenge due to poor bone quality and high rate of complications. We encountered similar problems in a patient of postinfective (filariasis) lymphedema with controlled Parkinsonism treated by TKR. Patient had a badly comminuted low supracondylar periprosthetic fracture which was managed by a surgical technique, not described previously in the literature with good outcome. We do not recommend this treatment as a routine for these fractures but may be tried in some of such desperate situations.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 22406**

**COMPUTER-ASSISTED NAVIGATION SYSTEM IN TOTAL KNEE ARTHROPLASTY – THE ROLE JUSTIFIED**

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Implant positioning is the crucial step in total knee arthroplasty to minimize long-term wear, risk of osteolysis, and implant loosening. The aim of our study was to determine the accuracy of component alignment in TKA using image-free computer navigation technology. A cohort of fifty computer-assisted TKAs was compared with a cohort of 50 TKAs done by the traditional technique. The implant alignment was determined pre- and postoperatively by weight-bearing anteroposterior (AP) and lateral full length X-rays with regard to the valgus angle and the coronal and sagittal component angles. The average postoperative mechanical alignment was 1.82 degrees of varus (range 5.9 degrees of valgus - 10.3 degrees of varus; SD 3.89 degrees) in the conventional cohort and 0.30 degrees of varus (range 3.4 degrees - 5.9 degrees of varus; SD 1.94 degrees) in the navigated cohort. Optimal implantation was performed in 36% in the traditional cohort and 64% in the navigated cohort. Our results confirm that the image free kinematic navigation system is easy to use, safe, and efficient in total knee arthroplasty.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 22470**

**AXIAL ALIGNMENT OF THE LOWER EXTREMITY IN INDIAN ADULTS**

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**BACKGROUND:** The restoration of normal axial alignment of the lower extremity is important to surgeons who perform reconstructive surgery of the knee. However, data on the normal alignment of the lower extremity in Indian adults are not available. **METHODS:** The axial alignment of the lower extremity in one hundred young male adults was measured on the weight bearing scanogram of the entire lower limb under standardized conditions. The angle measured were neck shaft angle, lateral distal femoral angle, medial proximal tibial angle, tibiofemoral angle, valgus angle. The mean age was twenty three years. The results were compared with three similar published studies in Chinese and American whites. **RESULTS:** Medial inclination of the tibial plateau in our subjects was 4.2 degrees, this was greater than reported for American subjects but less than that for Chinese. It was significantly noted that valgus angle was 6.1 degree at an average with the variation of 5-7 degrees. The average neck shaft angle was 128.4 and varied from 120-140 degrees. **CONCLUSION:** Compared with whit subjects described in the studies by Moreland et al, and Hsu et al the Indian subjects had larger medial inclination but lesser when compared with the Chinese subjects. Thus 4 degrees of external rotation of femoral component, instead of the commonly reported 3 degrees, may be required to obtain a rectangular flexion gap in total knee arthroplasty in our subjects.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 22533**

**FACETTED DESIGNED PATELLOFEMORAL REPLACEMENT IN THE TREATMENT OF ADVANCED ISOLATED PATELLOFEMORAL OSTEOARTHRITIS**

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**INTRODUCTION:** The isolated patellofemoral arthroplasty has not gained high popularity because of the high failure rate of the early designs. The main reasons for failure were the progressing femorotibial osteoarthritis and the patellofemoral malalignment. Promising short term results with faceted designed prosthesis are presented. **MATERIALS/METHODS:** 10 patellofemoral replacement (male/female: 1/9, age:57(38-69)years) were carried out at our department from 01.04.2008 till 01.02.2009. Isolated patellofemoral osteoarthritis was confirmed by arthroscopy in all cases. Patellofemoral dysplasia was noticed in 5 cases, 5 had idiopathic osteoarthritis. FPV Evos® (Wright Medical Ltd) faceted designed cemented prosthesis was used. This prosthesis has steeper and longer lateral trochlea with 140° coronal angle and an asymmetrically faceted oval patella, consequently providing better patellar tracking. **RESULTS:** In our series, no infection, no thrombosis/embolism occurred, no transfusion was necessary. At 6(2-10) months postoperatively average 125° (115-140) flexion was achieved, no lateral subluxation was observed. 2 patients reported residual anterior knee pain. The median Oxford score improved from preoperative 18 to 30 at 6 weeks and to 38 at 6 months postoperatively. No revision has been necessary so far. 9/10 patients are satisfied with the outcome. **CONCLUSION:** Although only early experiences are presented, the faceted designed prosthesis shows promising short term results. The maltracking related complications appear to be significantly reduced. Therefore the faceted designed patellofemoral replacement with appropriate patient selection and precise surgical technique appears to be a good alternative in management of advanced isolated patellofemoral osteoarthritis.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 22593**

**TOTAL KNEE REPLACEMENT IN POSTTRAUMATIC INDICATION**

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The RT-PLUS Solution\* is a third generation rotating hinge total knee design. It allows for an enhanced range of motion containing flexion/extension as well as rotation and longitudinal distraction. The implant is available in a standard cemented version with fixed stems. The hinge box has been minimized in size to reduce the total resection amount. To lower the risk of luxation, the rotating peg is 4 cm long. In spite of the long spine, component locking only needs minimum distraction due to a special coupling mechanism. Between July 2007 till December 2007, we performed 44 total knee replacements using the standard RT PLUS version. For follow-up, we performed an anamnestic and clinical examination, followed by a radiologic analysis including standard, long-axis and sunrise view x-rays. Results were validated according to the Knee Society scores. The average age of our patients at time of surgery was 73 years (min. 57, max. 82). 25 cases (57%) were primary implantations in severe valgus or varus arthritis, in 19 cases (43%) we performed revision surgery in postraumatic indication. At follow-up, most patients were more or less pain-free. The KSS from 47 to 88 points. We do not find any complications (superficial wound healing, DBVT's without embolism, peroneal palsy). Our experience with TKR RT PLUS were good, the clinical results - postoperativ X-ray, motion, pain are optimistic, there are only first results.

**Poster**

**Session: Arthroplasty - Knee**

**Abstract number: 22608**

**ARTHROPLASTY IN HEMOPHILIC PATIENTS: EXPERIENCE OF 14 SUCH TOTAL KNEE AND HIP ARTHROPLASTIES**

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We evaluated 10 hemophilic patients who underwent 7 total hips in 6 patients and 7 total knees in 4 patients between 2001 and 2009. The average age was of 36 years, from 25 to 50. Mean follow-up time was 37 months. 9 of our cases were type A haemophilia and one type B. Nine cases were severe under 1% level of clotting factor, with correlation between the severity of the disease and the level of joint destruction. At follow-up all patients were pain free, with a spectacular increase in joint motion and overall function. No infection or loosening were noted. All patients received Factor VIII and IX replacement therapy in average doses of 100.000 u.i. along with erythrocyte substitution. Only one procedure was complicated by hematoma formation. Postoperative bleeding was similar with nonhemophilic patients undergoing the same procedure. Total joint arthroplasty provides relief of pain, reduces the frequency of hemarthroses, and corrects most of the deformity, but it is usually associated with a limited range of motion. In conclusion, joint replacement offers haemophilic patients a long-lasting improvement of their quality of life and we therefore advocate its use. These surgeries are to be done only in centers where there is a good hematology backup and excellent theatre facilities for performing joint replacement surgeries.

**Poster**

**Session: Arthroplasty - Systemic**

**Abstract number: 21278**

**ORTHOPAEDIC SURGICAL SITE INFECTION SURVEILLANCE (OSSIS): A PRELIMINARY REPORT OF 719 CASES**

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**OBJECTIVE:** To determine the incidence and risk factors of orthopaedic surgical site infection (OSSIS) in Ramathibodi hospital. **MATERIAL & METHODS:** A prospective cohort study was conducted at orthopaedic clinic, wards, and operative rooms between November 2006 and August 2007. Eligible patients were admitted and underwent orthopaedic surgery at specialized orthopaedic operative theaters. Patients who had recent infection at planned surgical site were excluded. Preoperative, intraoperative, postoperative risk factors of surgical site infection were collected. The main outcomes were type and level of surgical site infection. **RESULTS:** A total of 719 cases underwent orthopaedic surgery, which composed of total hip and knee arthroplasty, spinal surgery and others. The average age at surgery was 48.3 + 22.4 years and 58% of them were females. The incidence of OSSIS was 1% (8 cases). Superficial infection occurred once in each operation. Two deep infections were documented in spinal and the other surgery. A case of organ specific infection presented after total knee arthroplasty. **CONCLUSION:** The incidence of OSSIS was comparable with other studies. The other risk factors of surgical site infection should be concern. And a long-term follow-up study will provide the practical issues of infectious control in orthopaedic surgery.

**Poster**

**Session: Arthroplasty - Systemic**

**Abstract number: 21987**

**TOTAL JOINT REPLACEMENT IN HAEMOPHILIA PATIENTS - REVIEW OF 14 CASES**

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Hemophilia is characterized either by low level of factor VIII - hemophilia A and Hemophilia B or factor IX deficiency. Intra articular bleeding causes a classical arthropathy; the hypertrophied synovium secretes hydrolytic enzymes which destroy the cartilage. We evaluated 10 hemophilic patients who underwent 7 total hips in 6 patients and 7 total knees in 4 patients between 2001 and 2009. The average age was of 36 years, from 25 to 50. Mean follow-up time was 37 months. 9 of our cases were type A haemophilia and one type B. Nine cases were severe under 1% level of clotting factor, with correlation between the severity of the disease and the level of joint destruction. At follow-up all patients were pain free, with a spectacular increase in joint motion and overall function. No infection or loosening were noted. All patients received Factor VIII and IX replacement therapy in average doses of 100.000 u.i. along with erythrocyte substitution. Only one procedure was complicated by hematoma formation. Postoperative bleeding was similar with nonhemophilic patients undergoing the same procedure. Total joint arthroplasty provides relief of pain, reduces the frequency of hemarthroses, and corrects most of the deformity, but it is usually associated with a limited ROM. In conclusion, joint replacement offers haemophilic patients a long-lasting improvement of their quality of life and we therefore advocate its use. These surgeries are to be done only in centers where there is a good hematology backup and excellent theatre facilities for performing joint replacement surgeries.

**Poster**

**Session: Arthroplasty - Systemic**

**Abstract number: 22006**

**A NATIONAL SURVEY OF INSTRUMENT SHARPENING GUIDELINES**

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Most orthopaedic procedures involve working with high speed tools which may cause thermal necrosis of bone. Blunt instruments cause more heat generation thereby increasing the chances thermal necrosis. Instrument sharpening is an important issue for orthopaedic procedures and unfortunately, there are no clear guidelines or protocols with regards to this. We carried out a survey across 40 hospitals in United Kingdom to find out current practices with regards to instrument sharpening, especially drills and reamers. METHODS: The questionnaire was directed at finding out whether there were any guidelines regarding instrument sharpening and how the blunt instruments were identified for sharpening or replacement. Questions also related to quality checks on instruments and manufacturers guidelines. RESULTS: All hospitals replied. Seventy five percent (75 %) of the hospitals denied any guidelines. The remaining 25% had guidelines concerning labeling and identification of blunt instruments. Eight hospitals (20%) carried out some sort of monitoring whereas 30 hospitals did not. In two hospitals the staff was not sure. Only 33% of hospitals were abiding by the manufacturers guidelines regarding instrument sharpening. DISCUSSION: Blunt instruments are too common in orthopaedic theatres. There is a significant risk of suboptimal outcome because of unnecessary thermal necrosis. This problem can be minimized to a considerable extent by simply using improved cutting tools. However, as there is no current guideline or consensus on this issue, we need to address it. By doing so, the practice could influence long and short term results of most of the orthopaedic procedures.

**Poster**

**Session: Degenerative diseases / Varia - Ankle/Foot**

**Abstract number: 21257**

**THE SCARF OSTEOTOMY FOR THE TREATMENT OF HALLUX VALGUS: WHEN DO PROBLEMS ARISE?**

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**INTRODUCTION:** The scarf osteotomy is a technically demanding procedure. We reviewed 33 cases of hallux valgus (HV) which were treated using the Scarf osteotomy between 2003 and 2007. We present their outcomes and radiographic results. We discuss our early experience with this procedure. **METHOD:** A prospective study was performed. The appearance, American Orthopaedic Foot and Ankle Society (AOFAS) score, Distal Metatarsal Articular Angle (DMAA), Hallux Valgus angle (HVA) and grade of sesamoid subluxation were assessed pre and post operatively. Patient satisfaction was recorded using a visual analogue scale (VAS). Patients were followed up at 2, 6 and 12 weeks and then 6 monthly post-operatively. **RESULTS:** Twenty seven patients (33 feet) were included. There were 7 bilateral procedures. Average time of follow up was 12.42 months (2-29). No patients were lost to follow up. Mean pre and post operative AOFAS scores were 53.5 (27-78) and 90.2 (67-100) respectively. The mean VAS score improved from 3.0 to 8.5. All patients were satisfied. The average HV and IM angles were improved from 37.8° (18-48) and 14.8° (10-28) preoperatively to 9.6° (2-20) and 7.7° (3-14) respectively. The average DMAA improved from 14.6° (4-30) to 6.9° (0-20). Nine complications (27.2 %) occurred. **DISCUSSION:** These results highlight issues faced early in the learning curve particularly by orthopaedic surgeons not working in subspecialty units. Early results are good but a significant complication rate exists. Complications occurred during the first 25 cases. This represented our learning curve.

**Poster**

**Session: Degenerative diseases / Varia - Ankle/Foot**

**Abstract number: 22215**

**GIANT CELL TUMOUR OF TALUS**

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Giant cell tumour of the small bones of hand and foot are relatively uncommon. We are reporting a case of Giant Cell Tumour of the Talus in a 20 year old female patient. She presented with painful swelling of the left ankle with a large osteolytic lesion in the talus on conventional radiographs. Due to the extensive nature of the lesion, talectomy and fusion was done. Biopsy showed a grade 2 giant cell tumour of bone. After three months of follow-up, the tumour showed no sign of recurrence. KEYWORDS: Giant cell tumour, Talus, Telectomy, tibiocalcaneal fusion, Relapse. Giant cell tumour of the talus is extremely rare and so far only 14 cases are reported in the literature 1,2,3,4. Giant cell tumour (GCT) is a locally aggressive neoplasm characterized by richly vascularised tissue containing proliferating mononuclear stromal cells and many osteoclast-like, multinucleated giant cells randomly but evenly distributed throughout 5,6,7,8. The recurrence of tumour is fairly common with GCTs and may metasize in 3% of patients 9. Currently, the modalities of treatment for giant cell tumour include curettage and grafting, en-bloc resection with grafting or athrodesis, chemical cauterly, telectomy, and amputation 1 & 10.

**Poster**

**Session: Degenerative diseases / Varia - Ankle/Foot**

**Abstract number: 22222**

**AN INTRANEURAL GANGLION CYST IN POSTERIOR TIBIAL NERVE AT THE ANKLE LEVEL**

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Intraneural ganglion cysts are very rare. They are mostly seen in peroneal nerve. Although its relatively common in peroneal nerve, there are few case of intraneural ganglion at ankle level in the literature. By the report of this case, we should consider intraneural ganglion cyst for the mass in tibial nerve at ankle level. **PATIENT:** A 24 y/o male noted a swelling at the posteromedial side of his ankle joint for the last 1 year. His complaint was numbness on the plantar and medial surface of his foot which was intermittent and mild. On physical examination, there was a round, firm, movable, painless mass at the posteromedial aspect of the ankle. There was no muscle atrophy or hypoesthesia at the foot or ankle. Tinel sign was negative. **RADIOLOGY:** MRI showed the presence of lobulated cyst within the tarsal tunnel. The mass showed uniform low signal density on T1-weighted images and high signal intensity on T2-weighted images. Size of the mass was 4.25x4.0x1.50cm. **OPERATIVE TECHNIQUE:** A curved skin incision was made over the tarsal tunnel. An encapsulated cyst is found just beneath the skin which surrounds the nerve. During dissection we realized intraneural invasion of the cyst. The cyst was successfully removed by dissecting the nerve perineurally and intrafascicular with microsurgical techniques. The patient was free of symptoms after surgery. **Pathological evaluation:** The pathological evaluation confirmed the diagnosis of ganglion cyst.

**Poster**

**Session: Degenerative diseases / Varia - Ankle/Foot**

**Abstract number: 22291**

**PERIPHERAL ANTINOCICEPTIVE EFFECT OF THE ENDOCANNABINOID 2-AG AND ENDOMORPHIN-1**

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**PURPOSE:** Several data suggest that both cannabinoid and opioid receptors are localized in the joint, and drugs acting on these receptors may produce antinociception after topical administration. The goal of this study was to determine the antinociceptive potency of the endogenous cannabinoid 2-arachidonoylglycerol (2-AG) and endogenous opioid peptide endomorphin-1 (EM-1) and interaction in the rat inflamed joint model. **METHODS:** Mechanical hypersensitivity was produced by injection of carrageenan into the tibiotarsal joint of the right hind leg. The mechanical pain threshold was assessed by von Frey filaments. 2-AG, EM-1 and their combinations were given into the inflamed joint, and the pain threshold was determined repeatedly for 105 min after the drug administrations. **RESULTS:** Both ligands produced dose-dependent anti-hyperalgesia, and the highest doses caused prolonged effect. Endomorphin-1 had higher potency (ED20 and ED30 values were 150 ug and 210 ug) compared to 2-AG (ED20 and ED30 values were 54 ug and 127 ug). The coadministration of 2-AG with EM-1 caused prolonged antinociceptive effect. None of the treatments caused any sign of side-effects. **CONCLUSION:** Peripherally administered cannabinoid and opioid agonist endogenous ligands might be beneficial in inflammatory pain. Their local administration causes no central side effects.

**Poster**

**Session: Degenerative diseases / Varia - Ankle/Foot**

**Abstract number: 22306**

**PIGMENTED VILLONODULAR SYNOVITIS OF THE ANKLE WITH DISTANT METASTASIS: AN UNUSUAL PRESENTATION**

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A 47-year-old male who presented with chronic swollen of left ankle for four years before coming to the hospital. The patient underwent excisional biopsy from the outside hospital. The pathological finding reported pigmented villonodular synovitis (PVNS). He was referred to our center due to local recurrence. The MRI revealed extra-articular and intra-articular diffuse soft-tissue tumor around ankle joint as well as subtalar joint. The debulging of tumor was performed. At eight years after first surgery, patient had got a local recurrence with large soft-tissue mass around left ankle. Below-knee amputation was performed. One year after BK amputation. He came back with the soft tissue mass at distal left thigh size 5X7 centrimeters. Marginal excision was performed. The post-operative radiation of 30Gc was given to prevent local recurrence. At two year after BK amputation, the soft-tissue with fungating mass at posterior aspect of left thigh was recurring again. Above-knee amputation was done. Recently, he developed a large mass at left groin area which was proven to be metastatic PVNS. The modified external hemipelvectomy was performed. The final pathologic reported was PVNS with malignant potential. **CONCLUSION:** Normally, PVNS is a benign non-metastasis tumor. The treatment is straightforward and has good result. We reported the unusual presentation of extra-articular diffuse PVNS of the ankle with distant metastasis to distal thigh and groin and had aggressive behaviour. From the literature reviews, this is an extremely rare condition. We advocate the early amputation and adjuvant treatment for this type of aggressive lesion.

**Poster**

**Session: Degenerative diseases / Varia - Ankle/Foot**

**Abstract number: 22352**

**OSTEOARTHRITIS OF THE FIRST METATARSOPHALANGEAL JOINT - TREATMENT WITH A NEW HEMIPROSTHESIS**

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**INTRODUCTION:** Implantation of a phalangeal hemiprosthesis is a surgical option for the treatment of hallux rigidus, particularly for younger and active patients. The aim of this study was to evaluate the preliminary outcome of the Arthrex AnaToemic phalangeal hemiprosthesis. **PATIENTS AND METHODS:** In this prospective study 61 feet of 53 patients (16 male, 37 female) with a mean age of 60.4 years (36 to 77 years) with severe hallux rigidus were treated by implantation of an Arthrex AnaToemic phalangeal hemiprosthesis. The AOFAS forefoot score, as well as range of motion (ROM) of the MTP-joint were evaluated before operation and at follow-up. The mean follow up period was 15.3 months (12 to 26 months). **RESULTS:** The average increase of the AOFAS hallux score was 28 points (-23 to 77 points). Concerning pain, the average score improved from 15.1 to 31.5 points. The average increase in the category function was from 25 to 34.4 points. In the category alignment the average preoperative value improved from 12.7 to 14.6 points. The average increase of range of motion was 15.3° (-40 to 77°). **CONCLUSION:** We conclude that the implantation of an Arthrex AnaToemic phalangeal hemiprosthesis seems to be a good surgical therapy option for the treatment of hallux rigidus.

**Poster**

**Session: Degenerative diseases / Varia - Ankle/Foot**

**Abstract number: 22525**

**OPEN-WEDGE FIRST METATARSAL BASAL OSTEOTOMY FOR TREATING MILD AND MODERATE HALLUX VALGUS**

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We evaluated the results of first metatarsal basal osteotomy for treating mild/moderate hallux valgus. From January 2005 to December 2006, 37 consecutive patients (44 feet) with mild/moderate hallux valgus were treated with open-wedge basal (proximal) first metatarsal osteotomy. The excised bunion was used as a graft for the osteotomy. Postoperatively heel weight bearing in bunion shoe was commenced progressing to full weight bearing as comfortable. All patients were reviewed atleast two years after surgery. Out of 44 operations, results of only 38 cases were reviewed as three patients had moved out of region and three patients could not be contacted. Average age was 57 years with average follow-up of 28 months. Mean postoperative AOFAS score was 79. The mean SF-36 score at last follow-up was 69 for physical health, 75 for mental health and mean total score of 73. Radiologically, Hallux valgus angle improved from 31 to 17.8 degrees. 1,2 Intermetatarsal angle improved from 14 to 7.3 degrees. 1,2 Intermetatarsal distance improved from 13 to 8.5mm. 1,2 metatarsal ratio improved from 0.85 to 0.90. Bony union was achieved in all cases. The result was excellent or good in 31 cases. 7 cases had recurrence of deformity. 9 cases had metalware related complaints. 5 patients had some neurological symptoms in immediate postoperative period which resolved completely. 3 cases had superficial infection treated with oral antibiotics. 82% cases had excellent to good results. Open-wedge osteotomy also helped restore first metatarsal length.

**Poster**

**Session: Degenerative diseases / Varia - Elbow**

**Abstract number: 21847**

**OSTEOMYELITIS VARIOLOSA**

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Small pox was eradicated from World in 1980, and hence orthopaedic manifestations of the disease are largely forgotten. One can still encounter orthopaedic complications of this disease in deformed and disorganised bones and joints. We report two such cases. MATERIAL AND METHODS: Case 1: A 64 year old male suffered traumatic fracture shaft humerus right side lower one-third and radiologically showed deformity over ipsilateral elbow in form of elongation and prominence of both the condyles and excavation of trocheal and capitulum portion. Opposite elbow showed similar changes and showed multi directional instability. These radiographic findings are considered characteristics of prior variola infection. Presence of these deformities since childhood and small pox scars all over body confirmed variola etiology. 2: A 53 year old male presented with contusion of left elbow. He had no bony injury but x-ray showed similar deformity as in case I. Both elbows showed multi directional instability and small pox scars were present all over body confirming variola etiology. CONCLUSION: The joints may be subluxated, flail, ankylosed, dislocated or show precocious osteoarthritis. The bones may be irregular, sclerosed or thickened. Following features point towards sequela of variolar involvement: a bilateral symmetrical affection of joints especially elbow; involvement of all three bones forming the elbow joint; elongation of medial and lateral condyles with absorption of central portion of lower humerus; disorganized joint with multidirectional instability. Despite distortion of medullary structure, the bones tend to heal normally after fracture.

**Poster**

**Session: Degenerative diseases / Varia - Femur**

**Abstract number: 20381**

**HIGH HYDROSTATIC PRESSURE, A NOVEL APPROACH IN ORTHOPEDIC SURGICAL ONCOLOGY TO DISINFECT BONE, TENDONS AND CARTILAGE**

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High hydrostatic pressure (HHP) is widely used in the food processing industry, e. g. to inactivate vegetative microorganisms in meat products, milk, and juice thereby avoiding the addition of any chemical preservatives. Besides that, HHP is also an attractive novel approach to effectively kill vegetative microorganisms or tumor cells in bone, cartilage, and tendon ex vivo while leaving the tissues mechanical properties unimpaired, thus allowing re-implantation of the resected tissue explants. Quite the opposite, sterilization by gamma irradiation and thermal or chemical inactivation of potentially infected autografts, allografts, and other biomaterials considered for tissue regeneration and reconstruction is often associated with deterioration of the mechanical, physical and biological properties of the implant. HHP technology is now in preclinical testing with the aim to disinfect/devitalize grafts in order to inactivate both vegetative microorganisms and tumor cells in resected bone tissue segments, eventually allowing re-implantation of resected bone segments initially afflicted with osteomyelitis or tumors.

**Poster**

**Session: Degenerative diseases / Varia - Femur**

**Abstract number: 21957**

**POLYOSTOTIC FIBROUS DYSPLASIA BONE IN SUBTROCHANTERIC**

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Fibrous dysplasia affects principally bone tissue, but it might present associated extraskkeletal abnormalities. The hallmark is replacement of normal bone and marrow by fibrous tissue and small, woven spicules of bone. It is classified in three types: monostotic, polyostotic and Albrights disease accordingly to the number of affected bones, and its association with endocrine alterations. A congenital etiology is suggested. Pathologic fractures are the most frequently associated complications. We present a case of a patient with a low energy subtrochanteric fracture as an initial manifestation caused by fibrous dysplasia, and a bibliographic review of diagnosis and treatment decision. Differential diagnosis must be done, including multiple myeloma among others. Decision making about the best treatment option must be done carefully.

**Poster**

**Session: Degenerative diseases / Varia - Femur**

**Abstract number: 22036**

**HISTOPATHOLOGICAL STUDY OF OSTEOPOROTIC CHANGES AFTER EXPERIMENTAL CREATION OF OSTEOPOROSIS BY OVARECTOMY IN THE RAT**

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**AIM:** The aim of the present study was to evaluate the histopathological changes of experimental osteoporosis in ovariectomized rats. **METHODS:** Female Sprague-Dawley rats, weighing about 210-240 g (10 weeks old) were divided into 10 groups (C1, C2 and C3 as control, S1, S2 and S3 as sham, T1, T2 and T3 as treatment groups and C0 as one pure control group) of 8 animals each. The nutritional and maintenance conditions were similar for all the rats. Treatment groups (T1, T2 and T3) were bilaterally ovariectomized using right and left flank approach. Sham groups (S1, S2 and S3) underwent operation, in which ovaries were exposed but left intact. Treatment (T1, T2 and T3) and their control groups (C1, C2 and C3) were respectively euthanized at 5, 12 and 21 weeks after ovariectomy. After necropsy, both tibia and femur bones were totally removed and fixed in 10% neutral buffered formalin and decalcified. Tissue specimens were stained with H&E for histopathological study. **RESULTS:** Microscopically, osteoporosis was prominent in treatment groups 12 and 21 weeks after ovariectomy (T2, T3). However, it was more severe in treatment group T3. Statistically, differences between ovariectomized groups (T1, T2 and T3) with 99% confidence were significant ( $P = \text{smaller than or equal to } 0.01$ ). However, differences between treatment group T1 and control groups were not significant. **CONCLUSION:** This study therefore suggests that osteoporosis is a progressive disease and characterized by decrease in bone mass and micro architectural deterioration of bone tissue.

**Poster**

**Session: Degenerative diseases / Varia - Hand/Wrist**

**Abstract number: 19940**

**CLINICAL OUTCOMES OF DUPUYTRENS CONTRACTURE TREATED BY PARTIAL FASCIECTOMY WITH Y-V AND Z-PLASTIES**

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**PURPOSE:** One of the major problems with surgery for Dupuytren's contracture is the management of skin closure. Y-V or Z-plasties constitute a useful one-stage technique and short wound-healing time. The purpose of this study was to evaluate the clinical outcomes of Y-V or Z-plasties for Dupuytren's contracture. **METHODS:** This study retrospectively reviewed the postoperative results of 23 patients (25 hands, 29 fingers) treated by partial fasciectomy and primary skin closure with Y-V plasties alone (Y-V group) or Y-V plasties + Z-plasties (Z group). The average age was 69 years. The average follow-up period was 7.4 months. In each finger, we assessed the preoperative grade with Meyerding's classification, and clinical outcomes according to the percentage improvement in extension and a modified version of Tubiana's classification. **RESULTS:** According to Meyerding's classification, 18 hands fell into the Y-V group (grade I: seven, II: two, III: nine); seven hands into the Z group (grade I: four, III: three). The average percentage improvement in extension for MP joint was 92% overall, -94% (Y-V group) and 86% (Z group); for PIP joint this was 56%, -56% (Y-V group) and 58% (Z group). By a modified version of Tubiana's classification, 83% overall, -82% (Y-V group) and 86% (Z group), had satisfactory results. Primary wound closure was possible in all cases; there was neither skin necrosis nor wound dehiscence. **CONCLUSION:** For Dupuytren's contracture, primary skin closure with Y-V and Z-plasties achieves satisfactory results, more so with MP than PIP joint involvement.

**Poster**

**Session: Degenerative diseases / Varia - Hand/Wrist**

**Abstract number: 20804**

**CORTICOSTEROIDS INFUSION VS DECOMPRESSION OPERATIVE TREATMENT IN PATIENTS WITH TRIGGER FINGER**

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**BACKGROUND:** The increase of incidence of trigger finger in manual workers makes it absolutely necessary to find alternative treatment methods for these cases. **AIM:** To evaluate and compare the two methods of treatment. We evaluated the frequency of the recurrence and the pain absence in these two methods of treatment, as well. **PATIENTS AND METHODS:** In our study 40 patients, with trigger finger syndrome, were randomly assigned to one of two following groups. In control group (20 patients) a decompression operative procedure was performed. In study group a combination of 2 ml xylocaine 2% and Betamethasone 1 ml was injected in the tendon sheath. The age and the type of injury of all patients were recorded. In a follow up period of 1 year, we evaluated the residual pain and the function of the hand of our patients with VAS and DASH score, respectively. **RESULTS:** The two groups were comparable according to age ( $p=0,424$ ), the type of injury ( $p=0,747$ ), VAS scale ( $p=0,867$ ) and DASH score ( $p=0,632$ ) before treatment. There was no statistical significant difference between groups according to VAS ( $p=0,162$ ) and DASH score ( $p=0,063$ ) in 1 year follow-up. There were no recurrences in any group and the patients of two groups are free of pain and rigidity. **CONCLUSIONS:** Corticosteroid infusion is an optimal treatment for trigger finger syndrome.

**Poster**

**Session: Degenerative diseases / Varia - Hand/Wrist**

**Abstract number: 21232**

**MINIMUM FIVE-YEAR FOLLOW-UP OF THE ARPE® PROSTHESIS IN TRAPEZIOMETACARPAL ARTHROPLASTY**

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**INTRODUCTION:** The surgical gold standart treatment of the thumb osteoarthritis is the trapeziectomy with tendon interposition with ligament reconstruction. The trapeziometacarpal prosthesis is insufficiently assessed in literature. **METHODS:** Between 1994 and 2001, 43 trapeziometacarpal prostheses ARPE were implanted by the same surgeon for isolated trapeziometacarpal degenerative osteoarthritis. The minimum follow-up is 5 years. 33 women and 2 men, average age 59,4-years, were operated after failure of conservative treatment. 7 patients were lost sight of (9 prosthesis) and 2 deaths (2 prostheses). 26 other patients (32 prostheses) were examined by the author with an original revision questionnaire associated to the score of DASH. **RESULTS:** 7 revisions were necessary: 5 for loosening, 1 for premature dismemberment and 1 for recurrent partial dislocation. The survival of the prosthesis is 85 % in 5 years. In the group of 25 prostheses still implanted, there is no radiological sign of loosening, but in some cases a development of medial ossification. The average DASH score is 27,4/100. All the patients of this group are satisfied or very satisfied. **CONCLUSION:** The prosthesis ARPE ® is an effective option in this series for the treatment of the degenerative trapeziometacarpal arthritis but its radioclinical control is necessary for the first year.

**Poster**

**Session: Degenerative diseases / Varia - Hand/Wrist**

**Abstract number: 21268**

**VITAMIN E AND PREVENTION OF COMPLEX REGIONAL PAIN SYNDROME IN PATIENTS WITH WRIST FRACTURE**

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**BACKGROUND:** The treatment of CRPS is symptomatic and the clinical is focus on prevention. The pathogenesis of CRPS is related to lipid peroxidation. Supplementation with antioxidants such as vitamin C and vitamin E can suppress neutrophil oxygen free radicals production and lowers the marker of lipid peroxidation in patient with myocardial infarction. The objective of this study is to establish the effect of vitamin E in prevention of CRPS in patients with wrist fracture. **METHODS:** In a double-blind, prospective, 270 patients with 270 wrist fractures were randomly allocated to treatment with placebo or treatment with 400 iU of vitamin E daily for 42 days. The effect of gender, age, fracture type, and cast-related complaints on the occurrence of complex regional pain syndrome was analyzed. **RESULTS:** Twelve patients were randomized to receive vitamin E, and ten patients were randomized to receive a placebo. Most of the affected patients were elderly women (17 from 22 patients). The type of fracture were Type 3 of Fernandez classification 82%, Type 12%. There was no complex regional pain syndrome in both groups. **CONCLUSIONS:** This study cannot conclude that vitamin E can prevent the CRPS in patients with wrist fracture. The further study needs to collect more patients and longer follow up time.

**Poster**

**Session: Degenerative diseases / Varia - Hand/Wrist**

**Abstract number: 21753**

**IMMUNOHISTOCHEMICAL PROFILE OF THE EXTRACELLULAR MATRIX OF THE HUMAN LUNOTRIQUETRAL LIGAMENT**

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The lunotriquetral ligament is one of the important ligaments of the proximal carpal row and connects the lunate and triquetrum bone. We investigated the composition of the ligaments extracellular matrix (ECM) by immunohistochemistry in both wrists of 6 human donors. The lunotriquetral ligament consists of fibrocartilaginous tissue, especially at its attachment sites. The ligament attaches to the carpal bone, either via hyaline or via fibrocartilage. The attachment to hyaline cartilage appears to be characteristic for younger individuals which don't show signs of degeneration. In older individuals the ligament often attaches to bone through a fibrocartilaginous enthesis which frequently shows signs of degeneration. The molecular composition of the ECM shows that the ligament contains type I and type II collagen together with versican, aggrecan and link protein.

**Poster**

**Session: Degenerative diseases / Varia - Hand/Wrist**

**Abstract number: 22126**

**CLINICAL OUTCOME OF CARPAL TUNNEL RELEASE WITH AND WITHOUT SIMULTANEOUS OPPOSITION TENDON TRANSFER FOR CARPAL TUNNEL SYNDROME WITH SEVERE THENAR MUSCLE ATROPHY**

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**PURPOSE:** Open carpal tunnel release (OCTR) is an established procedure. Simultaneous opposition tendon transfer with OCTR is also beneficial. However, no study has compared the clinical outcome between OCTR alone and OCTR with simultaneous opposition tendon transfer. The purpose of this study was to evaluate the clinical outcome of OCTR with and without simultaneous opposition tendon transfer for CTS with severe thenar muscle atrophy and to evaluate the effect of patients age (younger or older than 65years) on the surgical outcome. **METHODS:** 25 hands were treated by OCTR alone (10 hands) or in combination with simultaneous opposition tendon transfer (15 hands). The average age was 68 years and the average follow-up period was 21 months. We evaluated the clinical results using 1) a visual analog scale for pain and numbness; 2) a questionnaire for activities of daily living (ADL); 3) the Semmes-Weinstein test for sensory disturbance; and 4) measurements of grip and pinch strength. **RESULTS:** Pain, numbness, and sensory disturbance improved both with and without simultaneous opposition tendon transfer, the improvement being greater in younger patients. ADL improved both with and without simultaneous opposition tendon transfer. However, certain activities, such as fastening hooks or buttons, using chopsticks, and turning a key in a lock, improved more with simultaneous opposition tendon transfer. Pinch strength improved more in patients who underwent simultaneous opposition tendon transfer. **CONCLUSIONS:** In severe CTS, pain, numbness, and objective sensory disturbance improved more with OCTR in the younger patients. Simultaneous opposition tendon transfer was effective in improving certain ADL and pinch strength.

**Poster**

**Session: Degenerative diseases / Varia - Hand/Wrist**

**Abstract number: 22316**

**COMPARING CLINICAL AND ELECTRODIAGNOSIS EVALUATION IN CARPAL TUNNEL SYNDROME**

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Carpal tunnel syndrome (CTS) is one of the most common orthopedic diagnoses. The clinical symptoms included pain, temporary or persistent numbness and clumsiness while working. There were reports about predictors of treatment outcome with various results. We conducted the study to determine predictors of conservative treatment in mild to moderate degree CTS. **METHODS:** Forty patients with average age of 42 years who have symptoms of mild to moderate degree CTS at least 3 months without history of prior steroid injection at carpal tunnel were included. The definite diagnosis was made by electrodiagnosis. We recorded symptoms severity scale and functional status scale of Levine as a baseline for evaluation. All patients underwent conservative treatment for 4 - 8 weeks. If Symptoms severity scale and Functional status scale of Levine does not improved, they were given intra carpal tunnel steroid injection. Clinical follow up and electrodiagnosis follow up was done after injection at first week, forth week and twelfth week. **RESULTS:** Electrodiagnosis in all patients resulted in mild to moderate degree of CTS. Although most of the patient had clinical improvement since first week, electrodiagnosis were significantly improved at twelfth week. All 40 patients are followed for 11-36 months (mean 22 months). Finally, eight patients need carpal tunnel release. **CONCLUSION:** We can use the electrodiagnosis and Symptoms severity scale and Functional status scale of Levine as predictors to determine final outcome of CTS patient.

**Poster**

**Session: Degenerative diseases / Varia - Hip**

**Abstract number: 20788**

**TREATMENT OF PELVIC OBLIQUITY AND HIP DEFORMITY**

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Consists in Femur congenital and acquired deformities, hip and knee deformities like old hip dislocations or subluxations or even paralytic malformations and knee deformities. Consider a special method for correction, hip and knee axis need a special correlation of alignment, for this reason special hinges are modified for treatment of either isolated hip, knee deformities or when we have combined deformity an combined hinges modified for treatment both of hip and knee deformities, the used hinges are modified system of Salamehfix4, (SLDF4). From 2002 to 2008, 80 cases were treated with various hip and knee deformities. The main principal procedure done is the pelvic support osteotomy according to Ilizarov principal in treatment of Neglected dislocations in order to restore femur length and hip and knee alignment. The same principal was used in treatment of some hip post paralytic problems, because of muscle and bone insufficiency we have to make bony support to the pelvis or even changing the hip angel. In order to replace some of the muscle paralysis insufficiency this will decrease of Trandelenburg gait and limping and at the same time we can restore limb length. Complications were mostly superficial infection which treated locally. **CONCLUSIONS:** Correction of pelvic obliquity is a complex deformity and need a special experience. The used system differs by simplicity, small size in correlation to its functional hinges and stability of fixation and gives good results.

**Poster**

**Session: Degenerative diseases / Varia - Hip**

**Abstract number: 21165**

**SAFE SURGICAL DISLOCATION FOR THE TREATMENT OF SYNOVIAL OSTEOCHONDROMATOSIS OF THE HIP**

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Synovial osteochondromatosis of the hip is a rare benign condition. We reviewed seven patients with synovial osteochondromatosis of the hip who underwent surgical dislocation, removal of loose bodies and partial synovectomy. The patients were followed for a mean of 5 years. At the final review no patient had recurrence of the disease. No patient had progression of arthritis. No patient required total hip arthroplasty. No patient developed AVN of the femoral head. The mean Harris Hip Score at the last review was 92 points. There were no complications in this group of patients. Our results suggest that surgical dislocation together with removal of loose bodies and partial synovectomy is a reliable procedure that can effectively relieve symptoms and prevents recurrence of disease.

**Poster**

**Session: Degenerative diseases / Varia - Hip**

**Abstract number: 21183**

**TOTAL HIP ARTHROPLASTY FOR STAGE IV ASEPTIC NECROSIS OF THE FEMORAL HEAD IN HIV CARRIERS: MANAGEMENT AND EARLY OUTCOME**

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The aim of this study was to report our method of management and early outcome of a series of total hip arthroplasties implanted for stage IV aseptic necrosis of the femoral in HIV carriers. HIV carriers with stage IV aseptic necrosis of the femoral head were selected for total Hip arthroplasty and concomitant management of HIV carriage status. The diagnosis of aseptic necrosis of the femoral head was done on the standard X ray and treated by standard total Hip replacement. The HIV screening, its confirmation, the CD4 count and the viral load were systematically done by conventional methods. Patients with 500 or more CD4 solely underwent surgery with conventional 1.5 g of cefuroxime; those with 500 to 300 CD4/ml were treated with cefuroxime for 10 days and a fixed combination of antiretroviral tritherapy just after surgery; while those with less than 300 CD4 underwent 3 months preoperative antiretroviral tritherapy that was continued after surgery associated to the above extended antibiotic regiment. The outcome was assessed by wound examination, leucocytes count, erythrocytes sedimentation rates, C-reactive protein pelvic X-ray. Homozygous sickle cell disease carriers were excluded from the study. The preliminary results are presented and discussed with 3 months to 8 years outcome. They appear close to those of non HIV carriers; the Authors recommend the testing of their protocol by a controlled study.

**Poster**

**Session: Degenerative diseases / Varia - Hip**

**Abstract number: 21376**

**A NEW METHOD FOR THE TREATMENT OF THE AVASCULAR NECROSIS OF THE FEMORAL HEAD IN ITS EARLY STAGES**

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**INTRODUCTION:** The avascular necrosis of a femoral head among diseases of the musculoskeletal system reaches 3 % according to various authors. For this reason, the importance of this pathology is defined by the category of the diseased. Basically it is men of 20-40 years, i.e. people of able-bodied age. Use of the method of arthroplasty in such patients assumes subsequent revisions. **OBJECTIVE:** To develop a technique of treatment for avascular necrosis of the femoral head at the early stages, allowing a delay of the hip arthroplasty. **MATERIALS AND METHODS:** The condition of the patients in the early stages of the disease is revealed by means of a CT and an MRI. Issuing from pathogenetic disorders, we have developed a method of therapy, based on the prolonged medicamentous peridural block. 14 male patients in the early stages of an avascular necrosis of the femoral head are treated. **RESULTS AND CONCLUSIONS:** Efficiency of the use of the method is shown by the fact that within 5 years all patients experience a positive effect in the form of removal of pain, the stabilisation of the pathological process and a delay of the necessity for surgical treatment. According to the CT data, this method results in a cessation of the increase of the necrosis centre, and a regression of the disease in clinical findings is noted in all patients. Use of this suggested method of treatment on patients with early stages of an avascular necrosis of the femoral head keeps the disease from progressing.

**Poster**

**Session: Degenerative diseases / Varia - Hip**

**Abstract number: 21679**

**JOINT SPACE WIDENING IN SYNOVIAL CHONDROMATOSIS OF THE HIP**

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Widening of the joint space is one of the radiological findings in synovial chondromatosis. The cause and fate of the widening are unknown. This study evaluated the joint space widening in synovial chondromatosis of the hip. Out of 21 cases of synovial chondromatosis of the hip that were treated by synovectomy with chondroma removal between May 1991 and June 2005, 12 cases showed joint space widening on preoperative radiographs. The change in the joint space widening was evaluated on preoperative, immediate postoperative and follow-up radiographs. The mean duration of follow-up was 71 months (range, 28-144). Preoperatively, medial joint space widening was observed in 3 cases. Remaining 9 cases showed widening of medial and superior joint spaces. All cases had synovial chondromas in the acetabular fossa. No case showed superior joint space widening only. Compared with the contralateral hip, medial and superior joint spaces were widened in average by 45% and 30% respectively. Medial joint space widening decreased slightly immediately after surgery and maintained without remarkable change to the latest follow-up. Superior joint space widening did not show remarkable change after surgery and during follow-up. Synovial chondromatosis in the acetabular fossa seems to cause the joint space widening. Structural change seems to occur secondary to the joint space widening.

**Poster**

**Session: Degenerative diseases / Varia - Hip**

**Abstract number: 22086**

**THE OSTEONECROTIC FEMORAL HEAD SHAPE TREATED BY ALENDRONATE**

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**BACKGROUND:** Surgical osteonecrosis of the rat femoral head was induced by detaching the ligamentum teres and stripping the femoral neck periostium. Bone and marrow necrosis were found from the fifth postoperative day and replaced by creeping substitution. Osteonecrosis of the femoral head end with flattening to various degrees of roundness ended in osteoarthritic changes of the hip joint. Alendronate, an osteoclast inhibitor, slows down bone resorption and remodeling. **METHODS:** The right femoral head of 20 female Sprague-Dawley rats was operated accordingly. Twelve were treated by alendronate injections of 200 µg/kg/day and eight controls were treated with saline, both for a total of 42 days. Both femoral head specimens were obtained for computed-assisted morphometry. For each rat, the right operated head was compared to the left, and the alendronate-treated group was compared to the control group. **RESULTS:** No differences were found in shape-factor and femoral head height/length ratios in the alendronate-treated femoral heads. Among the non-treated control group, shape-factor differences were found between the operated and the non-operated femoral heads. **CONCLUSION:** Alendronate treatment prevented femoral head distortion and destruction. Osteoclast inhibition might prolong the bone creeping substitution process and could enable secondary bone maturity and mineralization that increases bone strength. By its activity, alendronate preserved the femoral head architecture which might reduce morbidity and disability due to femoral head collapse.

**Poster**

**Session: Degenerative diseases / Varia - Hip**

**Abstract number: 22348**

**BONE MARROW EDEMA OF THE FEMORAL HEAD – OUTCOME OF TREATMENT WITH PARENTERAL ILOPROST**

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**BACKGROUND:** Bone marrow edema (BME) is a common cause of hip pain. The aim of the study was to assess the efficacy of the vasoactive drug iloprost in the treatment of BME of femoral head. **MATERIALS AND METHODS:** We reviewed 27 patients (19 male, 8 female) with BME of the femoral head. Their mean age was  $53.7 \pm 10.8$  years. All patients were treated with iloprost, a vasoactive drug that dilates arterioles and venules, reduces capillary permeability and suppresses platelet aggregation. The therapy comprised a series of five infusions with 20 to 50 µg iloprost over 6 h on 5 consecutive days each. Weight bearing was reduced for up to 3 weeks, depending on the severity of symptoms. Pain at rest as well as under stress was assessed with a semi quantitative scale from before and 4 months after therapy. MRI investigations were done before and repeated 4 months after therapy. **RESULTS:** At the clinical follow up of four months after therapy, the pain level at rest had diminished by a mean of 58.3% ( $P < 0.0001$ ). Pain under stress decreased by a mean of 41.9% ( $P < 0.0001$ ). On MRI, 20 patients had a significant reduction of BME size or complete normalization and 4 showed no change. Worsening of the MRI pattern was found in 3 patients. **CONCLUSION:** The authors conclude that the use of parenteral iloprost might be a viable method in the treatment of BME of femoral head.

**Poster**

**Session: Degenerative diseases / Varia - Hip**

**Abstract number: 22464**

**PATHOLOGICAL DISLOCATION OF HIP: AN UNUSUAL SKELETAL MANIFESTATION OF NEUROFIBROMATOSIS**

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A thirty three year old lady presented to our hospital emergency with complains of severe pain right hip following a trivial trauma. Physical examination on admission revealed multiple café au lait spots on the body and lisch nodules in the eye. There was a family history of neurofibromatosis. The right hip was held in abduction and external rotation. Pelvic radiographs revealed an obturator type of anterior dislocation of hip along with significant widening of the obturator foramen of the same side. Closed reduction was done and a post reduction abduction brace was applied. Post reduction MRI was done to evaluate the cause of pathological dislocation and it showed right pubic, ilium and acetabulum erosion with synovial proliferation. CT guided biopsy was done from the pubic lesion which was suggestive of neurofibromatosis. The patient wore the abduction brace for 3 months. Six months post reduction the hip was stable and had unrestricted motion. Radiographs showed no progression of the lesions. Pathological dislocation of hip in a patient with neurofibromatosis is a rare entity with only five cases being reported in English literature. One case was managed by open reduction as the hip was not stable after closed reduction. Rest of the case reports are silent on their management details as they are only descriptive case reports. We conclude that management of such patients (patients of pathological dislocation of hip with neurofibromatosis) should be individualized based on the stability of hip after closed reduction.

**Poster**

**Session: Degenerative diseases / Varia - Humerus**

**Abstract number: 21975**

**GIANT CELL TUMOR (GCT) OF BONE: 3 DECADES EXPERIENCE**

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**INTRODUCTION:** In (GCT) of the bone the histology does not predict the clinical outcome certainly; about 80% of GCT have a benign course with a recurrence of 20-25% and 10% undergo malignant transformation event with an initial benign histology. Attempting to classify GCT in a way which could be useful for planning surgery Jaffe et al. and Dahlin and Enneking and Campanacci classified it as benign, active and aggressive type on the basis of the histological and clinicoradiological features. **METHODS:** Two hundred and forty three patients with the diagnosis of GCT (F/M ratio: 1.1/1) were enrolled within the last three decades. Work-up studies consisted of incisional biopsy, laboratory measures including PTH assay, and imaging measures. **RESULTS:** The Most frequent involving site was about the knee joint, followed by the distal radius and proximal of humerus. In GCT benign or active type which had undergone extended curettage followed by adjuvant therapy and bone graft or cement, the recurrence was seen in 12%. In aggressive type, enblock resection followed by reconstruction with auto or allografts or custom made prosthesis was performed with a recurrence rate of less than 1%. **CONCLUSION:** In the cases limited to the affected bone surrounding by intact cortex, extended curettage with adjuvant therapy and filling the involved area with bone graft or cement could be the best solution, but in the cases of aggressive expanded to adjacent tissues, the best surgical treatment is enblock resection of the tumor with host bone and then reconstruction surgery.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 19827**

**MEDICAMENTAL MODIFICATION OF BLOOD SERUM AS A MEANS OF TRANSFUSION CHONDROPROTECTION OF JOINTS AT POST-TRAUMATIC OSTEOARTHRITIS**

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When treating post-traumatic osteoarthritis blood serum by injection in joint of patient it seems appropriate to modify the serum by the drugs of a target effect. The modification may be exercised directly in the patients' organism. Introduction of the drug necessary for treating a diseased joint into the organism can be peroral, intramuscular or intravenous depending on the medication form. To have the autoserum saturated with the drug, the blood specimen is taken from a vascular bed at its maximal concentration. Saturated autoserum is injected into the articular cavity 5-6 h after blood sampling without freezing, which enables to preserve all biological properties of this substance. The method of a directional medicamental modification of autoserum makes it possible to solve the following problems: 1) total biological compatibility between the preparation and the patients' organism; 2) elimination of the necessity of mixing and dosage of the preparations as the organism can determine itself the optimal concentration of a drug in serum; 3) tightness and sterility of the preparation formation process. As a result, such problems can be solved in combination as the correction of tribological properties of synovial fluid, local effect on the pathological (inflammatory) hotbed in joints, and cartilage protection from ongoing degradation. Injection of a medical composition directly into the articular cavity escaping the surrounding tissues enables to reduce the dose and frequency of injections as compared to intramuscular or peroral methods, which lowers the risk of side effects.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 19956**

**THE APPLICATION OF PERIOSTEAL GRAFT WITH MEDIAL OPENING WEDGE TIBIAL OSTEOTOMY FOR CORRECTION OF ADULT GENU VARUM**

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The appropriate treatment of unicompartmental gonarthrosis of the knee remains controversial, especially in young active patients. High tibial osteotomy (HTO) can still provide a consistent pain relief and improved function for most patients with unicompartmental knee disease. **PATIENTS AND METHODS:** twenty-two adult patients had an operation for correction of their symptomatic genu varum as a prophylactic procedure against development of knee medial compartment arthrosis. Although many surgical techniques describing medial opening wedge high tibial osteotomies have been previously published, most techniques share similar surgical principles. What differentiates our technique from others is the avoidance of harvesting local autograft bone to fill the osteotomy gap. Instead, a locally harvested periosteal graft is used to cover the osteotomy gap and to enhance healing. **RESULTS:** All patients had relief from knee pain and improvement in walking ability after the osteotomy without statistically significant increase in healing time. **CONCLUSION:** Using periosteal graft to enhance filling the osteotomy is simple, efficient, reproducible, and safe. This article reviews the novel technique for enhancing bone healing with opening wedge high tibial osteotomies.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 20511**

**HIGH TIBIAL OSTEOTOMY- LONG TERM FOLLOW-UP**

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Arthritis of the knee becomes one of the front liners among the causes of mans disablement. Arthritis may cause mild to moderate pain while to pain at rest, joint stiffness and varus or valgus deformity. These may withheld a person from his job by preventing him from sitting cross-legged, squat or climb the stairs or walk distances etc. Antiinflammatory drugs, physiotherapy and change in life style comprise essential part of conservative treatment. Various surgical procedures like joint debridement, arthrodesis, arthroscopic surgery and osteotomies and joint replacement have been described. Role of osteotomy have been studied for prompt relief and make the patient lead a longer independent life.100 patients have been operated over a time period of 5 years with different methods of high tibial osteotomy and their results have been evaluated. 80 cases were treated with upper tibial osteotomy and 20 patients were done with dome osteotomy. In this study the patient who showed good results 52, fair 35 and poor 12. 12 Patients have superficial infection, 5 patients showed weakness of dorsiflexion of foot which recovered in due course of time and 9 patients showed pain at site of fibular osteotomy and 3 patients had fracture into the joint.All patients were benefited by surgery as regards the relief of pain. Very old and obese patients showed poor results after surgery due to their inability to do required physiotherapy. Patient with 1-10 of postoperative valgus in tibio-femoral alignment obtained maximum pain relief and good range of motion.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 21267**

**MOLECULAR CHARACTERIZATION OF EXON 8 OF THE ESTROGEN ALPHA RECEPTOR POLYMORPHISM IN THAI PRIMARY KNEE OSTEOARTHRITIS**

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**BACKGROUND:** Osteoarthritis (OA) is recognized to have a genetic component. Estrogen receptor Alpha single-nucleotide polymorphism (ESR alpha SNP) is one of the previously reported to be associated with knee OA. However, these relationships were not replicated in various ethnic groups. **OBJECTIVE:** To determine the genetic association between ESR alpha and knee OA in Thai population. **METHOD:** A case-control study was conducted at Ramathibodi Hospital between August 2007 and May 2008. ESR alpha SNP was genotyped by Restriction fragment length polymorphism (RFLP) method in 104 patients who were clinically and radiographically diagnosed as having knee OA according to American College of Rheumatology criteria, and in 104 controls who had no evidence of knee OA. The Hardy-Weinberg Equilibrium (HWE) was assessed for quantitative traits of this SNP. Genotype frequencies in cases and controls were compared by logistic regression analysis from STATA 10.0 program. **RESULTS:** The distribution of ESR alpha SNP was normally distributed regarding to HWE. The prevalence of allele G was 78% and allele A was 22%. The genetic association was found the risk of knee OA in AG and AA when compared with GG; odds ratios (OR) 1.02, 95% confidence interval (CI) 0.60-1.80, OR 1.27, 95%CI 0.30-4.90, respectively. **CONCLUSION:** Our study shows that this polymorphism may be associated with knee osteoarthritis in Thai group. A further study should be investigated the other SNP and analyzed with the haplotype analysis.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 21403**

**THE STUDY ABOUT THE ASSOCIATION BETWEEN THE QUALITY OF LIFE AND THE SEVERITY OF THE OSTEOARTHRITIS DIAGNOSED BY THE RADIOGRAPHY IN THE POPULATIONS AGED OVER 40 YEARS OLD IN MOO 15, NAYAO VILLAGE THAKRADARN SUBDISTRICT, SANAMCHAIKHET DISTRICT, CHACHO**

Chainarong SIRIKARNJANAKOWIT

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**OBJECTIVE:** To study association of QOL and radiographic severity of osteoarthritis diagnosed in population aged over 40 years in Thai rural village, and find prevalence, risk factors and association of QOL that was measured by modified Thai version of WOMAC osteoarthritis index and osteoarthritic assessment by modified Thai version of AAOS knee questionnaire. **APPROACH:** Collect data in populations by interviewing demographic data and radiograph in standing anteroposterior and lateral position of knee to diagnose osteoarthritis condition and interpret result by criterion of American College of Rheumatology. The diagnoses of osteoarthritis and radiography are used to evaluate severity of osteoarthritis by criterion of Kellgren-Lawrence grading scale. **RESULTS:** There were 350 participants (age 40-84 years, average 55). The prevalence of osteoarthritis was 46%. The risk factors were old aged people over 55years, menopausal women ( $p$ -value $<0.001$ ), BMI over 25 ( $p$ -value 0.016). Using Fishers exact test to see association between QOL measured by Thai modified WOMAC for rural areas and radiographic severity of osteoarthritis indicates that there is statistical significance ( $p$ -value=0.004). There were reliability of Thai modified WOMAC and Thai modified WOMAC for rural areas. There were associations among Thai modified WOMAC, modified Thai version of AAOS knee questionnaire, Thai modified WOMAC for rural areas. **SUMMARY:** The level of QOL and radiographic severity of osteoarthritis have statistically significant association and Thai modified WOMAC for rural areas is appropriate to evaluate level of QOL for people in country. Moreover, modified Thai version of AAOS knee questionnaire is practical in clinical ways for convenience and rapidity.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 21412**

**GENE THERAPY IN JOINT CARTILAGE REGENERATION-EXPERIMENTAL STUDY IN SHEEP**

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The objective of this study was to investigate the feasibility of genetically modified autologous bone marrow transplantation in partial-thickness cartilage regeneration. 28 skeletally mature sheep (1 to 3 years old) were used in this study. Partial-thickness chondral defect was made on the weight-bearing surface of the medial condyle with standard mosaicplasty instrument, and corresponding bone marrow clots were carefully inlaid into the defects without material fixation. In the bone marrow clot (BMC) group (n=6), the sheep were implanted with untreated autologous bone marrow clot. In the bone marrow transduced with Ad.GFP (GFP) group (n=6), the sheep were implanted with autologous bone marrow clots genetically modified to over express green fluorescent protein (GFP), and in TGF group (n=10) with clots genetically modified to over express transforming growth factor- $\beta$ 1. Six untreated sheep served as a control. All sheep were euthanized 6 months after surgery. The repair of defects was investigated histologically and scored using a semi-quantitative grading system according to the International Cartilage Repair Society Visual Histological Assessment Scale. Histological analysis showed that new tissue formed in all the treatment groups except in the empty controls, and the biochemical analysis showed optimal content of glycosaminoglycans and collagen type II only in TGF treated group. The results suggest that proposed method is a single-step procedure that can be easily implemented in standard clinical settings, and avoids the use of expensive in vitro production of autologous, engineered tissues

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 21491**

**STUDY TO EVALUATE THE USEFULNESS OF HIGH TIBIAL OSTEOTOMY**

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In this era of replacements for osteoarthritis, we tried to evaluate the results of high tibial osteotomy a procedure which already has proven values, but slowly receding into wilderness due to the inclination towards replacements. Twenty five cases of osteoarthritic knees were treated using a closing wedge high tibial osteotomy with the fixation being done with coventry staples. The mean age of the patients was 52 yrs. The number of male patients was 21 and 4 female patients and the mean follow up period was 42 months. Patients with unicompartmental arthritis were taken for the study and patients with rheumatoid arthritis, associated ligament instability, severe restriction of movements, age >65yrs and those with arthritis involving all compartments were not included in this study. Patients were assessed using the Japanese orthopaedic association score. 80 per cent of the knees had either an excellent or a good result taking into consideration of pain relief, squatting and carrying out daily activities. Postoperatively, many of the patients were able to participate in activities, such as running and jumping, which would lead to damage of the components in a replaced knee. We conclude that high tibial osteotomy still has a significant role in relieving pain, restoring stability and improving function in unicompartmental osteoarthritic knee and has only few associated complications. It is therefore suitable for the elderly taking into account the affordability factors of the people from rural areas in developing nations like ours.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 21557**

**SHORT-TERM EVALUATION OF EFFICACY AND SAFETY OF TRANSDERMAL-FENTANYL IN MODERATE PAIN IN PATIENTS WITH KNEE OSTEOARTHRITIS**

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**OBJECTIVES:** This prospective, open-label study was designed to evaluate the efficacy and safety of 12.5 µg/hr transdermal matrix fentanyl (TDF) for the treatment of moderate pain regarding to Osteoarthritis (OA) of the knee, which was not adequately controlled by non-opioid analgesic. **METHODS:** Patients who met the ACR criteria for OA of the knee with initial pain score more than 4 cm. were received 1 month treatment of TDF. During study treatment, previously prescribed NSAIDs were discontinued and no other concomitant analgesic was allowed except rescue acetaminophen 500 mg (maximum 4 g/day). Pain and function were assessed using the WOMAC OA Index. **RESULTS:** From the 35 patients recruited, 14.3% withdrew from the trial with the reason of adverse events (3 patients) and other reasons (2 patients). From baseline to endpoint, TDF provided significant reduction in total WOMAC score, individual pain, stiffness and physical functional sub-score, as demonstrated by mean change in score respectively, -73.2 [95%CI; -57.67, -88.63], 22.2 [05%CI; -15.97, 28.42], -21.5 [95%CI;-14.26, 28.66] and -29.5 [95%CI;-24.93, -34.36] with all p value<0.0001. A total of 16 adverse events occurred in 10 of 33 patient who were administered at least one patch. The most common adverse events were nausea (43.8%), vomiting (43.8%) and dizziness (12.5%). **CONCLUSIONS:** TDF 12.5 µg/hr provided a therapeutic benefit in OA knee pain, with an acceptable adverse events rate.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 21672**

**CONSTRUCT AND CRITERION VALIDITY OF PHYSICIAN-RATED KNEE SCORING SYSTEM**

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**PURPOSE:** Although a variety of outcome measures are available to evaluate physical impairment and disability in patients with knee osteoarthritis, most of physician-rated measures are not validated. The objective of this study was to assess the construct and criterion validity of observer-based knee scoring system (the JOA) commonly used in Japanese clinical practice and to determine demographic variables affecting the score. **METHODS:** Consecutive 85 patients with primary knee osteoarthritis completed the JOA (consisting of 4 domains addressing pain, disability during walking and stairs, mobility, and swelling), two validated patient-rated measures including generic instrument of Short Form-36 (the SF-36) and disease specific scale of Japanese Knee Osteoarthritis Measure (the JKOM), and performance based timed-up-and-go test (TUG). Criterion validity was determined by examining correlation of the JOA to the SF-36 and the JKOM. Construct validity was verified by correlating each domain with objective measurement. Spearman's correlation coefficients were analyzed, and a p-value less than 0.05 was considered significant. **RESULTS:** The JOA significantly correlated to patient-rated outcome measures (SF-36:  $\rho=0.549$ , JKOM:  $\rho=-0.688$ ,  $p<0.001$ ), indicating criterion validity of the JOA. Domains of function in the JOA had correlations with TUG ( $\rho=-0.639, -0.630$ ,  $p<0.001$ ), showing sufficient construct validity of the JOA. As a demographic variable, patient's age highly affected the JOA ( $\rho=-0.537$ ,  $p<0.001$ ). **CONCLUSIONS:** The JOA, which is generally used as observer-derived knee scoring system, is a valid tool evaluating functional status in patients with knee osteoarthritis.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 21817**

**CORRECTION OF GENU RECURVATUM: COMPARISON OF SURGICAL TECHNIQUES, FUNCTIONAL AND BIOMECHANICAL OUTCOMES**

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Most of the genu recurvatum deformities are treated with orthopaedic systems. Surgical correction is indicated in severe deformities with limited functionality. All the pre-existing techniques have a high ratio of recurrence. The tibial trans tuberositary surgical technique has shown a better functional outcome. The objective of this study is to determine the utility and the efficacy of this procedure in comparison with supra or infratuberositary osteotomies techniques. The current study was made over the period between 2006 and 2008. Series of lateral radiographic projections measurements were made that included angle of recurvatum (RG) and angle of the tibial plateau (RT). This angle showed that all thirty five patients had over fifteen degrees in both measurements. A total of thirty five opening wedge osteotomies across tibial tuberosity for the correction of genu recurvatum were made. The surgical technique consisted of fifteen per five millimetres wedge taken from the anterior base including the tendon insertion. In this defect a four centimetres of peroneal autologous graft, is fixated with Steinman wires correcting the recurvatum. The patients were followed for a period of one year, with periodical consults at six weeks, six months and one year. The result of this procedure in comparison with the preview techniques, had a better functional and biomechanical outcome over one year of follow up. We recommend a three to five years follow up for better result comparison.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 22163**

**A CASE OF OSTEOCHONDRAL DEFECT OF PATELLA: AN UNUSUAL ENTITY**

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A case of 25 year male presented with pain & swelling in right knee. On examination diffuse swelling was present in knee. Hemotological parameters, biochemical analysis, microscopic examination and PCR for M. Tuberculosis of knee aspirate and X-ray of knee was WNL. MRI revealed punched out lesion in articular surface of patella with bone odema. Diagnosis of osteochondral defect was made. Patient was planned for Arthroscopic abrasion chondroplasty. On arthroscopy lytic lesion on articular surface of patella with dirty granulation tissue at its base was found. HPE examination of granulation tissue revealed Tubercular pathology. Patient was treated with 4 drug ATT (HRZE) and showed good results and full ROM. Radiographic features of osteoarticular tuberculosis are well known and diagnosis is not difficult in majority of cases. But this atypical presentation at an unusual site with normal hemato-radiological parameters can lead to misdiagnosis. It is desirable that increased awareness of these atypical presentations of osteoarticular tuberculosis will improve diagnostic accuracy at an early stage of disease.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 22185**

**SPECTROCOLORIMETRIC EVALUATION OF HUMAN ARTICULAR CARTILAGE**

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**INTRODUCTION:** The best known cartilage lesion classification was developed by Outerbridge. This classification consists of four grades and is easy to understand and to use for physicians. However, more objective data regarding cartilage lesion and more accurate methods to evaluate the clinical outcomes are required, because new therapies are developed. The aim of this study is to investigate whether human articular cartilage can be evaluated quantitatively by a spectrophotometer. **MATERIALS AND METHODS:** We studied 79 human articular cartilage specimens retrieved from patients who underwent total knee arthroplasty. 79 human articular cartilage specimens were analyzed using a spectrophotometer after macroscopic evaluation and the cartilage characteristics on the L\*a\*b\* colorimetric system, the spectral reflectance distribution, and the yellow/red spectral reflectance (Y/R SRP) were examined. **RESULTS:** There were significant difference among four grade in the L\*, a\* values and Y/R SRP. The spectral reflectance distribution of grade 1 cartilage showed a gradual increase in spectral reflectance ratio along the increase wavelength. The spectral reflectance curve of grade 2 to 4 cartilage had dip around 580 nm in wavelength. Across all the measurement wavelengths, there was lower reflectance ratio with the progression of cartilage degeneration. **CONCLUSIONS:** The present study is the first to clearly demonstrate the relationship between spectrophotometric evaluation and the Outerbridge classification of human articular cartilage. The spectrophotometer may be a new quantitative evaluation tool for articular cartilage with clinical potential.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 22287**

**SPONTANEOUS ISCHEMIC NECROSIS OF THE KNEE**

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**KEYWORDS:** Around knee osteonecrosis, ethiology, prognosis Osteonecrosis is one of the most frequent orthopaedic diseases in last years. Although it prefers the hip, now a day more and more cases with osteonecrosis around the knee have been observed. It commonly affects the medial femoral condyle. The ethiology is complex, including the following: trauma, vascular factors, infection, inflammatory, autoimmune, metabolic or congenital. Spontaneous osteonecrosis has a distinct place. Our paper reveals that exist a gradually increasing frequency of this lesion, reporting 6 cases in the last 6 months, with age between 40-75 years old, especially in women. The prognosis is rather bad, because of the articular distruction, which may induce total knee arthroplasty, the best solution in solving these cases.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 22457**

**INFLUENCE OF DEMETHYLATION ON GENE EXPRESSION IN HUMAN ARTHRITIC AND NON-ARTHRITIC CARTILAGE**

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**INTRODUCTION:** Very few studies have examined the DNA methylation status of human chondrocytic genes. The aim of this study was to evaluate the influence of demethylation on the gene expression of main extracellular matrix components of cartilage, enzymes that mediate cartilage destruction and bone morphogenetic proteins. **MATERIAL:** We collected eight probes of cartilage before undergoing knee joint replacement from single-compartment osteoarthritis patients. Cells from macroscopic normal and arthritic areas were harvested. After digestion, half of the cells were treated with 10 uM of demethylation agent 5-AZA-deoxy-cytidine. After harvesting the cells, RNA was extracted using the Trizol method and cDNA was transcribed. Gene expression for MMP 13, Aggrecane, BMP-2, BMP-4, Collagen II and Collagen X was performed with the Taqman® Realtime PCR Assay using standardized primers. Moreover, methylation specific PCR was performed to assess the methylation status. **RESULTS:** Interestingly there was a significant increase of the gene expression of MMP-13, Collagen II and a 1, 5-fold increase of BMP-2 gene expression after treatment with 5-Aza-deoxy-cytidine in the human arthritic cartilage cell cultures compared to the untreated macroscopically intact controls. There was no obvious change in gene expression for BMP-4, Collagen X and Aggrecane. **CONCLUSION:** Further investigations are needed but the obvious increase of MMP-13, Collagen II and BMP-2 gene transcriptions in arthritic human chondrocytes lead us to the thought, that methylation could play an important role in the pathogenesis of osteoarthritis. If so this may lead us to new therapeutic aspects of this common disease in the future.

**Poster**

**Session: Degenerative diseases / Varia - Knee**

**Abstract number: 22480**

**OSTEOARTHRITIC CHANGES OF THE PATELLOFEMORAL JOINT IN STR/ORTCRLJ MICE ARE THE EARLIEST DETECTABLE CHANGES AND MAY BE CAUSED BY INTERNAL TIBIAL TORSION**

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STR/ort mice develop a naturally occurring osteoarthritis (OA) of the knee joints. However, the evaluation of early OA changes has been difficult due to variability caused by gender, individual differences and differences between the right and left lower limbs. The objective of this study was to analyze the variability of the early OA changes with age in STR/ort mice and to identify the cause of onset. A total of 115 STR/OrtCrlj mice aged 10-45 weeks were examined. In addition to conventional radiological and histological evaluation of the knee joints, histological sections were used to examine the patellofemoral, femorotibial and growth plate cartilage under similar conditions. A morphological evaluation of tibiae including micro-3-dimensional computed tomography was performed. Radiological evaluation showed OA changes in the joints of mice over 35 weeks of age and histological evaluation showed early OA changes in the femorotibial joints of mice over 26 weeks old. However, these OA changes were not common in all individuals and differences between right and left lower limbs were observed. In contrast, most common and reproducible OA changes were observed in the bilateral patellofemoral joints of all individuals, and even in subjects ranging from 10 to 20 weeks of age. Morphological evaluations also demonstrated an abnormal tibial internal torsion. In conclusion, the earliest histological OA change was observed in the patellofemoral joint prior to similar observations in the femorotibial joint. Internal tibial torsion may be a cause of OA in the patellofemoral joints, which leads to the development of medial femorotibial OA.

**Poster**

**Session: Degenerative diseases / Varia - Shoulder**

**Abstract number: 20569**

**ADULT-ONSET STILL'S DISEASE - A RARE OSTEOARTHRITIS ENTITY FOR THE ORTHOPEDIC SURGEON**

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Arthritic pain is relatively common in the adult population. Usually, the cause is a primary degeneration, a posttraumatic condition or a systemic inflammatory osteoarthritis, as rheumatoid arthritis. Septic causes are rarer, but very likely if the pain occurs in association with fever. In the current case report, confronted with a case of febrile arthralgia, we ruled out step by step the differentials, and, teaming-up with our medical colleagues, found a cause and a cure for a seldom entity in an adult orthopedic clinic, Stills disease. Case: A 59-year old woman presented with fever more than 39° C and clinical signs of omarthritis. The right shoulder showed a painful restriction of movement without signs of inflammation. The laboratory results showed among other things high inflammation markers. The x-ray, blood cultures was inconspicuous. We performed two shoulder arthroscopies without getting further informations to the diagnosis, bacteriologic examinations were sterile. After excluding malignancies, infection and other rheumatoid disease our tentative diagnosis was an AOSD. This assumption was supported by a serum ferritin of 795ng/ ml. Oral prednison therapy improved the clinical picture and the inflammation markers. Discharge of the patient in a good general condition. A final check three months later showed a symptom free patient and normal laboratory findings. We therefore assumed a favorable course with full remission. Conclusion: This case shows that a predominantly medical condition can be most relevant for the orthopedic surgeon and illustrates that the interdisciplinary approach is extremely important in the osteoarthritis diagnostic process.

**Poster**

**Session: Degenerative diseases / Varia - Shoulder**

**Abstract number: 20872**

**SMOKING AND SLEEPING IN DECUBITUS POSITION INCREASE RISK**

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Impingement syndrome is the most common cause of shoulder problems. Our study aimed to evaluate the association between risk factors including sleeping position and impingement syndrome. One hundred and eleven patients with impingement syndrome and 191 patients having knee or back pain as a control group were included. Data regarding history, physical examination and radiographic evaluations using supraspinatous outlet views were obtained from all subjects. The diagnosis of impingement syndrome was confirmed by xylocaine subacromial injection test. All patients were interviewed concerning their usual sleeping position, which was categorized into supine, decubitus, prone and undetermined. Radiographs were evaluated to determine the shape of the acromion. We found the 4 independent risk factors affecting impingement syndrome were smoking status, occupation, acromion shape, and sleeping position. Patients who currently smoked had a 6.8 greater risk of impingement syndrome compared to non-smokers (OR 6.8 (95%CI: 1.2-39.8)), and government officers had a 6.3 times increased risk compared to rubber tappers (OR 6.3,(95%CI: 1.3-30.3)). Patients with hook type acromion had 6.2 times the risk of flat type (OR 6.2 (95%CI: 1.1-35.0)), and patients who slept in the decubitus position had 3.7 times the risk of those who slept in the supine position (OR 3.7 (95%CI: 1.2-11.6)). In conclusion, our study found four independent risk factors for impingement syndrome including current smoker, government officer, hook-type acromion and decubitus sleeping position.

**Poster**

**Session: Degenerative diseases / Varia - Shoulder**

**Abstract number: 21184**

**EVALUATION OF MR IMAGING FOR LONG-TERM HEMODIALYSIS-RELATED SHOULDER**

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**PURPOSE:** To investigate shoulder magnetic resonance (MR) imaging in long-term, that is over 20 years, hemodialysis recipients. **MATERIALS AND METHODS:** Twelve patients (9 men, three women; mean age, 64) who suffered from hemodialysis-related shoulder pain underwent 1.5-T MR imaging to confirm their shoulder structure with conventional (T1WI, T2WI) techniques. Ten patients who examined MR imaging due to periarthritis of shoulder were randomly chosen for comparison group (4 men, six women). The average duration of hemodialysis was 24 years (range, 20-31 years). The thickness of rotator cuff was measured at 1 cm away from the insertion of humeral head. If the measurement was greater than 6 mm, it was considered to be abnormal in accordance of previous reports. Student t-test was used for statistical analysis. **RESULTS:** Not only subscapularis (n=8) and supraspinatus tendon (n=8), but also infraspinatus (n=9) tendon was considered to be abnormally thickened in hemodialysis recipients. The average thickness of each rotator cuff in hemodialysis group were as below; Subscapularis tendon was 9 mm (SD 1.28 mm), supraspinatus tendon was 7.8 mm (SD 2.04 mm), infraspinatus tendon was 6.72 mm (SD 1.56 mm), and teres minor tendon was 5.54 mm (SD 2.26 mm). The thickness of rotator cuff was significantly increased in hemodialysis recipients than in periarthritis group in all four tendons. **CONCLUSIONS:** Rotator cuff would become thickened in long-term hemodialysis patients. Assessment of MR imaging for this disease would be useful for future and further treatment.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 19619**

**DECISION MAKING IN SACRAL TUMORS**

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Our study presents results of a group of patients with primary tumors of the sacrum surgically treated by the same multidisciplinary team at a specialist oncology centre. Between January 2000 and December 2005, 17 primary sacral tumors were surgically treated at our institution. The diagnosis included chordoma in 6 patients, giant cell tumor in 7 patients, aneurysmal bone cyst in 2 patients and a chondrosarcoma, and an osteoblastoma in one patient each. Sixteen of these patients were analysed. Ten cases were treated with wide excision and underwent partial sacral amputations. Six benign lesions were treated with curettage. The follow up duration ranged from 18 months to 44 months with a mean of 31 months. None of the six patients who presented with loss of bladder and bowel control regained it after surgery. Of the 10 patients who had intact bladder and bowel control preoperatively only 4 retained bladder and bowel control postoperatively. Local recurrence occurred in 4 of the 10 lesions treated with wide excision. All the patients who had inadequate margins recurred. Local recurrence occurred in 2 of the 6 lesions treated with curettage. We conclude that wide resection should be the surgery of choice for all malignant primary sacral tumors and in benign lesions involving lower segments when preservation of both S3 roots is possible. Intralesional curettage has a higher risk of local recurrence without providing the certainty of retaining neurological function and it may be worthwhile managing benign sacral tumors which extend above S3 with serial embolisation.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 19753**

**STAND ALONE MULTIPLE LEVEL ANTERIOR CERVICAL FUSION USING POLYETHERETHERKETONE (PEEK) CAGES CONTAINING CALCIUM SULPHATE PELLETS**

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**STUDY DESIGN:** A prospective series. **Summary of Background Data:** Anterior cervical discectomy and fusion is the classic treatment for cervical disc disorders. Filling cages with autologous bone grafts assures achievement of fusion; nevertheless, iliac crest donor-site morbidity is still a complication of concern to both patient and surgeon. On the other hand, the use of anterior plating was recommended in multiple level fusions. **OBJECTIVE:** To evaluate the effectiveness of implanting interbody PEEK cages containing Calcium Sulphate Pellets for the treatment of multiple level cervical disc disease without plating; assessing the radiological and clinical outcome. **METHODS:** The study included 21 patients with 58 discs who underwent ACDF with PEEK cages filled with Calcium Sulphate Pellets. The age at surgery averaged 48y (range 37-63y) and patients were followed up for a minimum of 3 years. Clinical outcome was by Odom's criteria and VAS while radiological evaluation included disc height and fusion rates. **RESULTS:** Excellent to good clinical outcome was found in 78% of patients. Disc height improved postoperatively from an average of 5.2 mm to an average of 6.9 mm and disc height loss of an average of 1.2 mm at the last follow up. Fusion occurred in all but 3 levels but none required revision and there were no cage dislodgments. **CONCLUSION:** ACDF using PEEK cages packed with Calcium Sulphate Pellets is a safe and efficient modality for treatment of multilevel cervical disc disease without the hazards of iliac crest grafting or the need for anterior plating.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 19773**

**REDUCTION OF HIGH GRADE SPONDYLOLISTHESIS WITH TRANSFORAMINAL LUMBAR INTERBODY FUSION – IS IT SAFE?**

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**STUDY DESIGN:** A retrospective series. **Summary of Background Data:** Several controversies exist over the most appropriate approach for managing high grade spondylolisthesis. The classic Interbody fusions are associated with a considerable degree of complications. **OBJECTIVE:** To determine the safety and efficacy of this technique in managing high grade isthmic spondylolisthesis. **METHODS:** Twelve patients with severe spondylolisthesis treated with TLIF were followed for a minimum of two years. The mean age was 21 y (range 17 - 28). All patients had severe back and radicular symptoms. The percentage of slipping averaged 72 %. Two patients had foot drop. Five were at L4/5 and seven at L5/S1. Formal decompression and gradual reduction followed by TLIF were performed. Patients were evaluated for fusion rate, clinical outcome, and complications. **RESULTS:** The average follow-up was 3 y (range 2 - 5). The average Oswestry Disability Index improved from 62 to 14 points. The fusion rate was 94 % and sagittal translation improved from an average of 72 % to 33 %. There were no neurological complications and the two patients with preoperative foot drop improved at follow up. **CONCLUSIONS:** TLIF is an efficient option to treat high grade spondylolisthesis. It provided immediate stability and both clinical and radiological outcomes were satisfactory.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 19775**

**UNILATERAL TRANSFORAMINAL LUMBAR INTERBODY FUSION (TLIF) FOR EARLY ONSET POST - DISCECTOMY SPONDYLODISCITIS**

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**STUDY DESIGN:** A prospective series. **Summary of Background Data:** Post-operative intervertebral disc space infection had been recognized as a hazardous complication of lumbar discectomy. The classic treatment was usually conservative including a minimum of 6w of antibiotics with its potential complications. **OBJECTIVE:** To evaluate the efficacy of this technique in iatrogenic spondylodiscitis following lumbar discectomy. **METHODS:** The study included fifteen patients with early postoperative spondylodiscitis who presented on an average of 13 days (range 10 - 26 days) following their index surgery. Discitis was diagnosed clinically by markedly elevated ESR, CRP values and radiographically by MRI. Through a unilateral transforaminal approach, they were managed by early removal of the infected necrotic tissue, aggressive debridement of the disc space, packing with autograft mixed with antibiotic impregnated Ca Sulphate and pedicle screw instrumentation. Systemic antibiotics were administered for only 10 days. **RESULTS:** Immediate pain relief was noted in all patients; at a minimum follow-up of 2 years, excellent or good clinical results were achieved in 92% of the patients, whereas 8% had poor results. Elevated ESR and CRP values returned to normal ranges within 7 to 18 days (average 12 days). The average Oswestry Disability Index improved from 75 to 19 points and the fusion rate was 95% with no evidence of recurrence of infection. **CONCLUSIONS:** Early TLIF is an efficient alternative to treat iatrogenic spondylodiscitis avoiding the classic prolonged periods of antibiotic therapy and immobilization and yielding excellent clinical and radiographic outcome.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 19780**

**CIRCUMFERENTIAL RESECTION OF AGGRESSIVE OSTEOLASTOMA OF THE CERVICAL SPINE**

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**STUDY DESIGN:** A retrospective series. **Summary of Background Data:** The spine accounts for 40 to 50% of all osteoblastomas from which only 20% are located in the cervical spine. Surgical treatment is a challenge due to the tumor's location, proximity to the neural and vascular elements and local aggressiveness. **OBJECTIVE:** To study the safety and efficacy of front and back total excision of aggressive osteoblastoma of the subaxial cervical spine. **METHODS:** Nine patients with aggressive osteoblastoma of the subaxial cervical spine were included. The average age was 18y (range 8 to 26y). All patients presented with persistent pain, limited range of motion of the neck and 3/9 had a neurological deficit. All patients had a sequential front and back total excision. Anteriorly, the tumour was thoroughly resected, the vertebral artery was exposed and vertebral body was reconstructed by an iliac crest strut autograft and instrumented by a locked plate. Three patients had soft-tissue components in the epidural space, necessitating dissection of the tumor from the dura. Posteriorly, the rest of the tumour was totally excised and lateral mass fixation performed when necessary. **RESULTS:** Patients were followed for 34 to 52 m. All patients showed improvement in their pain and neurological status. Follow up imaging studies showed cervical alignment was maintained, no tumor relapse and adequate bony healing. **CONCLUSIONS:** Circumferential resection of aggressive osteoblastoma of the cervical spine is a demanding procedure. Nevertheless, total excision can be performed with adequate spinal reconstruction.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 19831**

**TOTAL SPONDYLECTOMY OF C2: A NEW SURGICAL TECHNIQUE**

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Progress in the surgical technique and an intensive development of instrumentation for stabilization of the spine allow applying ever more aggressive surgical techniques. Complete resection of the entire mobile segment offers new possibilities in the treatment of primary spinal malignancy. According to the available sources, no case of total spondylectomy of C2 with preservation of roots, preservation of vertebral arteries and a short fixation without occipitocervical fusion has been so far described in the literature. We performed a radical surgery in 3 patients. Similarly as other authors, also we could not avoid serious complications that substantially prolonged the period of hospitalization. In spite of this, the short-term result is very satisfactory and the patients are satisfied. Total spondylectomy of C2 with preservation of vertebral arteries and roots stabilized only by a short fixation is an extreme surgical procedure suitable only for exceptional cases of young patients with a good bone quality. With regard to potential complications it is of vital importance to consider carefully such operation and consult the proposed therapy with the patient.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 19984**

**ERYTHROPOIETIN'S (EPO) OSTEOGENIC POTENCY IN POSTEROLATERAL SPINAL FUSION**

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**HYPOTHESIS:** Erythropoietin (EPO) is beneficial in uninstrumented posterolateral spondylodesis (PLF). **MATERIAL AND METHODS:** Two groups consisting of 11 mature rabbits underwent PLF (L5-L6). Autograft was applied (2g/side). NeoRecormon (Roche; 250IU/kg/day) or saline were injected s.c. for 20 days starting 2 days preoperatively. Blood samples were taken before the first injection and 2, 4 and 6 weeks postoperatively. CT scan at 6 weeks was used to evaluate fusion rate and volume. After CT the animals were killed and the lumbar spine removed. Manual palpation (mp) was used to evaluate motion. Post mortem x-rays were taken. All analyses were blinded. **RESULTS:** Three animals died due to anesthetic complications. No motion at the fused segment was present in 67% vs. 40% in EPO and control group estimated by mp. X-ray and CT overestimated fusion rate compared to mp: 100% vs. 80% and 89% vs. 80% respectively. The fusion volumes were  $3.382 \pm 0.273$ ccm in the EPO and  $3.022 \pm 0.235$ ccm in the control group ( $p=0.007$ ). Haemoglobin and haematocrit were elevated and platelets decreased in the EPO as compared to the control group at all timepoints ( $p<0.001$ ). Plasma concentration [rhEPO] was  $116 \pm 34$  mIU/ml in the EPO group at 2 weeks, while no other samples contained rhEPO. **CONCLUSION:** EPO increased fusion volume, -rate and stability in PLF determined by mp, x-ray and CT. EPO had also a systemic effect. Fusion rate was overestimated by x-ray and CT compared to mp.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 20292**

**PERSONAL DATA MANAGEMENT FOR ORTHOPEDIC SURGEON AN EXAMPLE FROM SPINE OPERATIVE DATABASE**

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Data management strategies have been introduced in many organizations for a long time and now it seems to be more important issues for everyone. In the view point of clinical practice, data management can help surgeons for the decision about operative options and can provide a reliable data for inform consent. Moreover, for research, it is a comfortable way to find data for retrospective studies. We succeed the database for Spine surgery, Spine operative Database, with created under most popular software, MS Access, and lunch in early 2009. This program was designed to systematically record, proper patient history and co-morbid conditions and summarized result in term of function scores and others and provided numerous basic retrospective researches modalities. Moreover, it was designed for convenient and flexible data input as well as easy reorganize for future development. This can be an example for created own personal database for every orthopedic surgeons.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 20422**

**COMPARATIVE STUDY OF ANTERIOR VERSUS POSTERIOR DECOMPRESSION IN OLD PATIENTS OF CERVICAL MYELOPATHY WITH CO-MORBID CONDITIONS**

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**INTRODUCTION:** Cervical myelopathy or myeloradiculopathy is a progressive degenerative disorder that usually starts in middle age. It leads to circumferential cord compression leading to a constellation of signs and symptoms. The purpose of our study is to assess the results of posterior surgery in patients suffering from multilevel multidirectional compressive cervical myelopathy with co-morbid conditions and to compare results of anterior and posterior surgery clinically, radiologically and functionally. **MATERIAL AND METHODS:** Prospective study of 30 cases in which we had compared the results of anterior and posterior decompression surgery. Our follow up ranged from 18 to 60 months with an average follow-up of 31.8 months. **RESULTS:** 18 patients underwent laminectomy by posterior midline approach in which lamina and if required, medial one-third of the facet was also removed. Discectomy and bone grafting was done in 8 patients by standard anterior approach with removal of disc at 2 or 3 levels. Corpectomy and discectomy above and below with bone grafting was done in 4 patients. Out of these 2 were fused with tricortical iliac crest and 2 with fibula. **CONCLUSION:** Anterior decompression is the gold standard. However, in medically unfit patients with multi-level circumferential posterior laminectomy is an equally rewarding option.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 20870**

**BONE MINERAL DENSITY IN POSTMENOPAUSAL WOMEN WITH OSTEOPOROTIC FRACTURES**

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This research is aimed at studying the bone mineral density among postmenopausal women with osteoporotic fractures. The total of 160 postmenopausal women 45 - 79 years old (average age -  $63,4 \pm 0,7$  years; average duration of postmenopausal period -  $14,4 \pm 0,7$  years) were examined. Patients were divided into two groups: group A - women ( $n=100$ , average age-  $63,2 \pm 0,9$  years) without osteoporotic fractures, group B - women ( $n=60$ , average age -  $65,5 \pm 1,2$  years) with osteoporotic fractures in their anamnesis. The questionnaire; measurement of anthropometrical characteristics; bone mineral density (BMD), T- and Z-scores of the spine (L1-L4), hip and forearm were determined by means of Dual-energy X-ray absorptiometer "Prodigy" (GE Medical systems, 2005). All indexes of different skeletal areas measured by DXA in postmenopausal women with osteoporotic fractures were significantly lower ( $p < 0,001$ ) compared with the data of women without osteoporotic fractures: total body- BMD:  $0,999 \pm 0,015$  g/cm<sup>2</sup> and  $1,097 \pm 0,010$  g/cm<sup>2</sup>; spine (L1-L4) - BMD:  $0,909 \pm 0,023$  g/cm<sup>2</sup> and  $1,094 \pm 0,017$  g/cm<sup>2</sup>; total femur - BMD:  $0,839 \pm 0,019$  g/cm<sup>2</sup> and  $0,968 \pm 0,016$  g/cm<sup>2</sup>; midforearm - BMD:  $0,562 \pm 0,013$  g/cm<sup>2</sup> and  $0,648 \pm 0,010$  g/cm<sup>2</sup>, accordingly. Low BMD of different skeletal areas is a significant predictor of osteoporotic fractures in postmenopausal women.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 20903**

**REDUCTION OF HIGH-GRADE SPONDYLOLISTHESIS BY A NOVEL THREE-STAGE TECHNIQUE**

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Management of severe isthmic spondylolisthesis (MeyerdingGr) is controversial. Anatomical reduction is desired to restore normal biomechanics/sagittal balance. Eight patients (4M;4F) were operated over 7 years (2000-06). The slip was Meyerding GrIII (3), IV(4) and spondyloptosis(1). Mean duration of symptoms (back/leg pain) was 13.7 months (r6-24m) and age at surgery was 15years (r12.3-17.3y). We measured slip angle (SA), percentage of slip (%S), sacral slope (SS), sagittal vertical axis (SVA) and correlated them with ODI & VAS. All patients underwent a 3 stage surgery in a single operative session: 1) Posterior decompression of L5/S1 roots with sacral dome osteotomy. 2) Anterior L5/S1 discectomy by trans-peritoneal approach 3) Reduction of spondylolisthesis & PLIF using interbody cages Anatomical reduction was obtained in all but 1 case. The mean operative time was 6.5 hours (r5-8h) with a mean blood loss of 0.45 times estimated blood volume (EBV). Mean follow-up was 4.5 years (r2-7y). The mean pre-op L5 SA & SS were 30 (r 21-43) & 16(r 8-28) which reduced to 2 (r0-7) & 38 (r25-43) degrees respectively post-operatively. The mean posterior shift of SVA was 38mm (r14-55mm). The mean change in ODI was 46% (pre-op 56% to post-op 10%) and VAS improved from 8 to 1 post-operatively. One patient with GrIV listhesis had transient L5 paresis. There was no pseudoarthrosis or loss of reduction at final f/u. Our technique is safe, permits anatomical reduction with minimal column shortening and restores normal biomechanics at lumbo-sacral junction.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 20904**

**STRATEGIES IN SURGICAL MANAGEMENT CRANIO-VERTEBRAL TUBERCULOSIS**

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Prospective analysis of surgery for cranio-vertebral tuberculosis (CV-TB) is sparse. Our objective were to define the role of trans-articular screw (TAS) and report clinico-radiological results outlining management strategies. 30 patients aged 10-51 years (mean 24.3y) were operated for CV-TB and followed-up for a mean of 3.9 years (2-10y). MRI revealed erosion of C1-C2 articular surfaces to be mild (3), moderate (15) and severe (12). Moderate erosions were further subdivided into type A (10) & B (5) based on integrity of central and medial portions. 15 patients had myelopathic signs and two had dysphagia due to large retropharyngeal abscess. The atlanto-axial complex was divided into either reducible/partially reducible (13) or irreducible/severe articular erosion (17) on flexion-extension x-rays. Patients with mild & moderate erosions (type A) underwent TAS fixation (13) while those with severe and moderate erosion (type B) had occipito-cervical fusion (OCF). 13 patients had resolution of myelopathy with no residual spasticity while 2 patients underwent second stage trans-oral odontoid excision with anterior decompression for residual supra-axial stenosis with spasticity despite anti-tubercular therapy for 12 months. Other complications included superficial occipital sores (2) and dural puncture while drilling the occipital cortex (2). There were no vertebral A or neurological injury. The fusion rate in TAS fixation group was 100% and 88% in OCF. CV-TB warrants surgical intervention once instability sets in. Judicious patient selection guided by patterns of articular surface erosion and reducibility is paramount for success of TAS. Sparing the occiput was associated with lesser morbidity, higher fusion rate and improved patient satisfaction.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 20951**

**EFFECTIVENESS OF INTRAVENOUS PAMIDRONATE FOR TREATMENT OF SEVERE OSTEOPOROSIS OF SPINE IN POSTMENOPAUSAL WOMEN**

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**AIM:** To evaluate the effect of intravenous pamidronate in treatment of severe osteoporosis in the postmenopausal women. **MATERIALS AND METHODS:** There were examined postmenopausal 20 women with osteoporotic vertebral fractures (average age  $67,8 \pm 1,4$  years), who took intravenous pamidronate (Pamired - «Dr. Reddy's») 30-90 mg (one dose – 30 mg a week) every three months and 1 tablet of Calcemin-advance (Calcium – 500 mg, Vit. D – 400 IU) 2 times a day during twelve months. Evaluation of pain syndrome was carried out with Visual analogue scale (VAS) and BMD was determined by means of Dual-energy X-ray absorptiometer "Prodigy" (GE Medical systems) before onset of treatment and after a three, six, nine, twelve months treatment course. **RESULTS:** We observed a reliable decrease of vertebral pain syndrome after three, six, nine, twelve months (from  $5,70 \pm 2,58$  up to  $3,35 \pm 2,13$ ;  $t=3,86$ ;  $p<0,00$ ). BMD of lumbar spine significantly increased in comparison with indexes before treatment after three, six, twelve (from  $0,832 \pm 0,11$  up to  $0,879 \pm 0,11$ ;  $t=3,20$ ;  $p=0,005$ ) months; BMD of femur (total) – after three, six (from  $0,749 \pm 0,13$  up to  $0,766 \pm 0,12$ ;  $t=3,53$ ;  $p=0,003$ ) months. **CONCLUSION:** Pamidronate treatment significantly decreases pronounced vertebral pain syndrome, as well as BMD of lumbar spine and femur after three, six, nine and twelve months therapy in the postmenopausal women with osteoporotic vertebral fractures.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 20953**

**EFFECT OF STRONTIUM RANELATE ON VERTEBRAL PAIN SYNDROME IN POSTMENOPAUSAL WOMEN WITH SYSTEMIC OSTEOPOROSIS TREATMENT**

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**AIM:** To evaluate the effect of strontium ranelate in treatment of systemic osteoporosis in postmenopausal women. **MATERIALS AND METHODS:** There were examined 82 postmenopausal women with systemic osteoporosis (average age  $58.4 \pm 4.5$  years). Evaluation of pain syndrome and level of physical activity was carried out with VAS. Bone mineral density (BMD) was determined by means of Dual-energy X-ray absorptiometer "Prodigy" (GE Medical systems) in 18 patients (average age  $61.2 \pm 1.8$  years). Examination was performed before onset of treatment and after a three and six month treatment course. Strontium ranelate (Bivalos, «Servier») was taken in a dose of one 2 g sachet as a suspension in water once a day and 1 tablet of Calcemin-advance (Calcium – 500 mg, Vit. D – 400 IU) 2 times a day during 6 months. **RESULTS:** We observed a reliable decrease of vertebral pain syndrome after three and six months ( $t=2.88$ ;  $p=0.005$ ) and increase of functional abilities of patients after three and six months ( $t=6.91$ ;  $p<0.0001$ ). After six months, BMD of femur (total) significantly increased in comparison with indexes before treatment (before treatment –  $0.79 \pm 0.02$ ; after six months –  $0.81 \pm 0.02$ ;  $t=-2.49$ ;  $p=0.03$ ). **CONCLUSION:** Strontium ranelate treatment significantly decreases pronounced vertebral pain syndrome and improves functional abilities of patients, as well as BMD of femur after six-month therapy in the postmenopausal women.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21022**

**IDIOPATHIC HYPERTROPHIC SPINAL PACHYMENINGITIS: A CASE REPORT**

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Idiopathic hypertrophic pachymeningitis is an extremely rare disease that characterized by marked fibrotic hypertrophy of the craniospinal dura with or without an associated inflammation. Since it was first reported by Charcot and Joffroy in 1869, few articles related to this disease have been published in the medical literature. Until 1997, Parney gathered 33 documented cases of idiopathic hypertrophic pachymeningitis. The English-language literature has reported 65 cases of this disease in the last five years. We report a case of idiopathic hypertrophic pachymeningitis occurring in a long segment of dura from C1 to sacrum. This is the first case that have been performed the decompressive surgery and involved all spine. The patient was 52 year old man, who had been suffered from both shoulder pain, clumsiness and motor weakness of both hands, numbness of right forearm and walking difficulty. The patient felt the improvement of his neurologic symptoms with decompressive surgery following pulse steroid therapy. Idiopathic hypertrophic spinal pachymeningitis is should be included in the differential diagnosis of clinical cervical radiculomyelopathy and systemic examinations should be performed to the fullest extent possible to investigate for an underlying disease. We consider that early surgical decompression is essential for making a diagnosis as well as leading to significant neurological improvement.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21086**

**HYPERTROPHIC SPINAL PACHYMENINGITIS: A CASE REPORT OF THE PATIENT WITH MULTIPLE SURGERIES DUE TO TWICE RECURRENCE.**

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**OBJECTIVE:** We report a case of hypertrophic spinal pachymeningitis (HSP) who had suffered from multiple recurrences. Summary of background data: Prognosis and etiology of HSP have been still unclear and the strategy of treatment has been under the controversy. Previously favorable results of surgical treatment have been reported and conservative treatments were proposed as an alternative option, however recurrences were observed in several literatures. **METHODS:** We present a case of HSP which recurred twice and required multiple surgeries. The patient was 71-year-old male, complaining of progressive weakness and sensory disturbance of his lower extremities. He underwent laminectomy and duroplasty for HSP of thoracic lesion. Despite the improvement of neurological function in the course of follow up, he suffered from recurrence 20 months after the surgery. He underwent the second operation that extirpated the thickened dura, and he regained the ambulatory function again. However second recurrence was confirmed when he noticed deterioration of his lower extremities function after sixteen months from the second operation. At the third surgery, cervical laminoplasty was performed with removal of scar-like tissue around the dorsal thickened dura and duroplasty extending from cranial side up to lower cervical region. **RESULTS:** He remained ambulatory with support of two T-canes after the third surgery and has been observed meticulously with concomitant oral corticosteroids. **CONCLUSIONS:** Although surgical approach has been recognized as a treatment for HSP that resulted in favorable neurological relief, more attention should be paid to the possibility of recurrence from the point of view of pathogenesis.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21109**

**OUTCOMES OF SURGERY FOR LENKE 5 AIS: POSTERIOR VERSES ANTERIOR**

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**INTRODUCTION:** Advances in pedicle screw fixation have spurred new interest in the selection of posterior pedicle screw constructs for Lenke 5 AIS. We report results, complications and revision rates of selective ASF vs PSF for Lenke 5 AIS. **METHODS:** Charts and X-Rays of 37 AIS pts (3M: 34F), avg. age 14.6yrs were retrospectively reviewed. ASF: n= 25, and PSF: n=12. Curve magnitude, sag; and coronal bal, PJK. # of level fused (#LF), length of stay (LOS), OR time, and complications was recorded. ANOVA and Fischers Exact test was used for statistical analysis. **RESULTS:** Avg, f/u was 27mos (12-78mos). TH/L-Lumbar /TH curve corr; was 71%/29% in ASF and 67%/44% in PSF. There were no statistically significant differences between ASF and PSF with respect to Post Op TH/L curve corr, and sagittal parameters. Significant differences were noted for age at surgery, #LF, LOS, and OR time. There were 4 complications in 4 pts (2 revised) in PSF: 1 neuro deficit, 1 decompensation, 2 implant failures. **CONCLUSION:** PSF had longer level fused with diminished OR time and shorter LOS. The deg of correction was similar in ASF vs PSF but an increase in complications and revision surgery for PSF.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21363**

**COMPLICATION AND TREATMENT OUTCOME OF DEGENERATIVE SPINAL DEFORMITY SURGERY IN ELDERLY PATIENTS**

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**OBJECTIVE:** To analyze the complication, clinical outcome and any correlative risk factors of degenerative spinal deformity surgery in elderly patients. **MATERIALS AND METHODS:** We reviewed 78 patients who underwent posterior decompression and posterolateral fusion requiring a minimum 3 level fusion for degenerative spinal deformity associated with spinal stenosis between May, 2001 and May, 2006 at least 1 year follow-up period. This study was performed, to assess and compare the postoperative complication and clinical outcome for the patients over 65 years (group A) and the patients between 50-64 years (group B). And risk factors that could influence the complication and clinical outcome were evaluated and statistically analyzed. **RESULTS:** Postoperative complication rate was 53% in group A and 40% in group B without statistical significance, but group A had a significantly higher frequency of minor complication than group B, especially in urinary retention and postoperative delirium. A statistical relationship between diabetes and deep wound infection of major complication was observed in both group A and B. Male was a risk factor for urinary retention and long operative times and abundant blood loss were significant risk factors for postoperative delirium in group A. **CONCLUSION:** There were no significant differences of the treatment result for degenerative spinal deformity between patients older than 65 and younger than 65. And it is considered that blood sugar should be controlled strictly before and after operation and needed appropriate managements for postoperative delirium and urinary retention in elderly patients.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21370**

**TRANSFORAMINAL SELECTIVE NERVE ROOT BLOCKS IN SINGLE LUMBOSACRAL RADICULOPATHY: A SHORT-TERM OUTCOME AND EFFICIENCY**

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**PURPOSE:** We tried to understand clinic usefulness by analyzing short-term results after procedure of the selective nerve root block(SNRB). **MATERIAL AND METHODS:** Sixty five patients were investigated for our research. Sixty five patients were divided into two groups, thirty-seven of group one is herniated nucleus pulposus (HNP) patients and twenty-eight of group two is foraminal stenosis (FS) patients. The effect of treatment was concluded by the degree of VAS and patients' subjective satisfaction. Average overall follow-up period was eleven months. **RESULTS:** For 65 patients, VAS of average 7.8 before SNRB decreased to 2.9 and 3.4. After 1 month follow-up, overall, 74% were above good. For 3 months follow-up, overall, 68% were above good. Operation was carried out due to no response after SNRB for 8 patients (12%) and aggravation for 4 patients (6%). Comparing two groups, better treatment effect was observed for the group of FS after one month ( $p=0.002$ ) and three months ( $p=0.01$ ). Complication related to SNRB was not observed for both groups. **CONCLUSION:** SNRB is very effective and safe procedure after appearance of symptom for the non-operative treatment. This treatment is more effective to FS than HNP and should be considered before operative treatment.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21446**

**APPLICATION OF RAPID PROTOTYPING IN ATHETOID CEREBRAL PALSY**

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Cervical myelopathy combined with cerebral palsy needs operative treatment because it causes instabilities and deformities due to involuntary exercise and spastic muscle contraction. It is possible that rapid prototyping enables three-dimensional space cognition, and feedback function for direction and distance. A 45-year-old male brought to the hospital complaining for walking difficulty and lower extremity motor weakness. He had previous diagnosis of athetoid cerebral palsy. Physical examination shows muscle strength of 4/4 for deltoid, 4/4 for biceps brachii, 4/4 for wrist flexor, 4/4 for wrist extensor, 3/4 for finger flexor and tingling sense of both hands. There was high signal on spinal cords of C3-4 on MRI T2 weighted image. We constructed real patients cervical model with rapid prototyping technique, we fixed lateral screw mass and rods, then we recorded direction and distances. We used the records into the operation. Posterior laminectomy, posterior screw fixation with lateral mass screw and fusion was done. Planning operative treatment, we decided to make three dimensional rapid prototype model of patients cervical vertebra. Not only to make it easy to evaluate space for pedicle screw insertion, but also to define screw trajectory, proper screw selection and technique rehearsal. **CONCLUSIONS:** Rapid prototyping helps three dimensional cognition and makes it easy to evaluate complicated cervical structures such as athetoid cerebral palsy.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21540**

**SUCCESSFUL SPINAL FUSION BY E.COLI DERIVED BMP-2-ADSORBED POROUS  $\beta$ -TCP GRANULES**

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Monomer BMP-2 molecules of human type without bone-inducing activity were produced by recombinant DNA technique in *E. coli* and transformed to dimer BMP-2 (E-BMP-2) with bone-inducing activity by *ex vivo* biochemical procedures. A 0.5 gram portion of porous  $\beta$ -TCP granules was adsorbed with several doses of E-BMP-2 (0, 5, 15, 50, or 150  $\mu$ g/side) and implanted to bridge between sides of lumbar (L5-L6) intertransverse processes of rabbits without use of autogenous bone grafting in 4-8 weeks. The lumbar spines of experimental animals were harvested and examined by plain radiography, 3D-CT, manual palpation test, 3-point bending test, and histological analyses. Posterolateral lumbar fusion was successfully achieved in groups implanted with  $\beta$ -TCP granule masses, each adsorbed with 15  $\mu$ g/side or more of E-BMP-2. Mechanical testing indicated significantly stronger fusion in the groups treated with 50 and 150  $\mu$ g/side of E-BMP-2 than in the autogenous bone graft group. Degree of degradation of the implanted  $\beta$ -TCP depended on the dose of adsorbed E-BMP-2. The biodegradable BMP-2/ $\beta$ -TCP composite implant was effective in achieving lumbar fusion without bone grafting in this rabbit model. This bone-inducing material can be expected to be useful as a bone graft substitute for bone regeneration in the clinical setting.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21595**

**DOUBLE-DOOR CERVICAL LAMINOPLASTY VERSUS MULTILEVEL ANTERIOR CERVICAL DECOMPRESSION WITH STRUT GRAFTING FOR MULTILEVEL CERVICAL MYELOPATHY: A 10-YEAR FOLLOW-UP COMPARISON**

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**INTRODUCTION:** The surgical outcomes of multilevel anterior cervical decompression with strut grafting (ACD) in patients with multilevel myelopathy were compared with those of laminoplasty (LP). All patients received regular postoperative follow-up for 10 years. **METHODS:** The study group consisted of 19 ACD patients and 24 laminoplasty patients. The causes of myelopathy were cervical spondylosis (n=16), OPLL (n=14), multilevel disc herniation (n=12), and vertebral fracture (n=1). Postoperative ADL was evaluated using the JOA score, nuchal pain (VAS), and restriction of cervical spine motion. **RESULTS:** The JOA scores (maximum, 17 points) of the ACD-group/LP-group were 11.3/11.6 preoperatively, 14.8/14.8 (recovery rate, 51.8% / 51.1%) 1 year postoperatively, and 14.7/14.8 (50.8% / 51.1%) 10 years postoperatively. Although the 10-s test reached a plateau 1 year postoperatively and was maintained for 10 years, grasp strength reached its peak at 1-3 years and decreased between 5-10 years postoperatively in both groups. The VAS for nuchal pain was 0.59/10 in the ACD-group, compared with 1.22/10 in the LP-group (n.s). No patient noticed restricted cervical spine flexion. In the ACD-group 7 patients noticed restricted extension, and 14 patients noticed restricted rotation. In the LP-group, 7 patients noticed restricted extension, and 10 patients noticed restricted rotation (n.s). **CONCLUSIONS:** Laminoplasty was less invasive than anterior decompression and fusion, but, 10 years postoperatively, there was no statistically significant difference in outcomes between the two groups.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21694**

**LOCAL APPLIATION OF LOW DOSE DEPO-MEDROL IS EFFECTIVE IN REDUCING IMMEDIATE POSTOPERATIVE BACK PAIN**

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This prospective, randomized case-control study was made to determine effectiveness of low-dose Depo-Medrol applied to the affected nerve root after discectomy. 57 patients with L4-5 or L5-S1 single level disc herniation with unilateral leg pain were selected for the study and were divided in two groups. 28 patients were in the control and 29 in the steroid group. Discectomy was done after flavotomy in all patients. In the steroid group lowdose 40mg Depo-Medrol soaked Gelfoam was applied over the affected nerve root after discectomy while in the control group neither saline nor plain Gelfoam was applied to affected nerve root. Postoperatively patients were asked to evaluate backache using VAS which was compared statistically using unpaired t test. Statistical difference was significant ( $p < 0.001$ ) regarding posoperative VAS during the first month and then it became insignificant. Results show that local application of low-dose Depo-Medrol is helpful in reducing immediate postoperative backache after discectomy, but it is not effective in the long term.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21695**

**THE KINEMATICS OF THE MAL-PLACEMENT OF THE INTERVERTEBRAL DISC ALLOGRAFT TRANSPLANT ON THE SEGMENTAL MOBILITY**

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In a recent clinical trial of the Intervertebral disc (IVD) allograft transplantation, Ruan et al. (2007) observed remodelling of the transplanted allograft with reasonable preservation of segmental motion. We hypothesized that remodelling of a mal-positioned allograft implant can restore the function and stability of the grafted functional spinal unit (FSU). 18 male goats (age 6-12 months, weight 25-30 kg) were used in this study. The goats were randomly assigned into a control group (n=5), a centrally placed allograft group (n=5) and a mal-positioned allograft group (n=5). IVD were obtained from sacrificed goats (n=3) and were cryopreserved in liquid nitrogen. Transplantation of a size matching fresh-frozen IVD allograft was performed in the lumbar region (L4-L5) after disc excision. In the centrally placed allograft group, the IVD allografts were placed centered and flush with the vertebral margin. In the mal-positioned allograft group, the allografts were placed anteriorly by 25% of the anterior-posterior length of the allograft. Post-operational lateral, flexion-extension x-rays were taken at 4 and 12 weeks for analysis. No significant differences in the range of motion were found among the groups at different time points. The disc height of the grafted segment showed an initial decrease at 4 wks (~80%) but this decrease was stabilised at 12 wks (~79%). Both the centrally placed and the mal-positioned allograft were able to preserve segmental motion. Mal-positioned allograft transplantation is compatible with good functional outcome through remodelling. In contrast to artificial disc replacement, precise positioning of allograft is not essential for functional success.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21696**

**SPINAL MYOCLONUS WITH RADICULOPATHY FOLLOWING SPINE SURGERY**

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Despite adequate surgery a number of patients have a return of back pain and radiculopathy of the legs following their operation. We present a case of spinal myoclonus with radiculopathy after spine surgery. A 51 year old woman with bilateral radiculopathy and urinary incontinence was diagnosed with a cauda equina syndrome with spinal stenosis. The patient underwent emergency operation for posterior decompression and posterolateral fusion from L2 to S1. Immediately after surgery the patient continued to experience intermittent myoclonic movement with severe shooting pain in her legs despite given pharmacological treatments such as benzodiazepines, opioids, NSAIDs and gabapentin. The patients were found to have sudden, brief, bilateral involuntary muscle contraction in the lower extremities. The patients were referred to pain clinic. She underwent a caudal block 2 times in 4 days. However she reported only limited pain relief for 3 to 4 hours. She was then prescribed phenytoin 300mg intravenously in a day. Her myoclonic movement gradually subsided after 1 week of receiving phenytoin. 60 days later, she was discharged without any long term sequelae.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21864**

**MANAGEMENT OF DEEP INFECTION AFTER POSTERIOR SPINAL INSTRUMENTATION WITH PROLONGED SUCTION DRAINAGE**

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**PURPOSE:** To Analyze of the inherent risk factors associated with deep infection and the efficacy of management with prolonged suction drainage without removal of implants. **MATERIALS AND METHODS:** Five cases of postoperative deep infection after posterior spinal fixation from May 1996 to May 2000 were investigated about combined general illness, features of infection, various profiles on management of the infection with surgical irrigation and debridement followed by prolonged suction drainage, and final outcomes. **RESULTS:** Remarkable risk factors were diabetes and obesity. Evidences of infection such as discharge from the wound, dehiscence, fever were observed on average 18.8th day postoperatively. By only one surgical procedure for each patient followed by prolonged suction drainage for mean 19.2 days and administration of IV antibiotics for average 43.6 days followed by oral antibiotics for 33.8 days, deep infections were controlled successfully without removal of implants and without any grave complications. All achieved favorable clinical results and posterolateral fusion. **CONCLUSION:** Irrigation and debridement accompanied by prolonged suction drainage using Hemo-vac and administration of susceptible antibiotics seemed to be one of effective methods in controlling deep infection after posterior instrumentation and in maintaining the postoperative stability of spine.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 21951**

**EFFECT OF YOGA THERAPY ON SUBJECTIVE SYMPTOMS IN PATIENTS WITH CHRONIC LOW BACK ACHE**

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**OBJECTIVE:** The aim of this study was to analyze the effect of a short-term intensive yoga program on pain and spinal flexibility in subjects with chronic low-back pain (CLBP). **SETTING:** The study was conducted at back clinic of department of orthopaedics and traumatology Gandhi Medical College Bhopal MP India. **SUBJECTS:** Sixty (60) subjects with CLBP, who consented, were chosen for yoga therapy if they satisfied the selection criteria. **INTERVENTION:** The intervention consisted of a 2-week intensive yoga program comprised of asanas (physical postures) designed for back pain, pranayamas (breathing practices), meditation, and didactic and interactive sessions on philosophical concepts of yoga. **OUTCOME MEASURES:** Pain-related outcomes were assessed by the Oswestry Disability Index (ODI) and by spinal flexibility, which was assessed using goniometer at pre and post intervention. Data were analyzed. **RESULTS:** Data conformed to a Gaussian distribution. There was a significant reduction in ODI scores in the subjects, Spinal flexibility measures improved significantly. **CONCLUSIONS:** two weeks of an intensive yoga-based lifestyle program reduced pain-related disability and improved spinal flexibility in patients with CLBP.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22019**

**OSTEOID OSTEOMA OF SACRUM PRESENTING AS LOW BACK PAIN - A RARE CASE**

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INTRODUCTION: Osteoid osteomas represent approximately 10% of benign bone tumors. They are rarely found in the sacrum and commonly affect adolescents. CASE PRESENTATION: We came across a male patient aged 24 years with low back pain since 4 years. On examination he had tenderness over right sacroiliac joint and over right sacrum without any neurodeficit. Patient remained undiagnosed for past 4 years with MRI of spine showing only mild disc bulge at L4-L5 level. He was being treated conservatively until recently when repeat MRI of LS spine also showed hyperintense signal in S2-3 segments of sacrum of significance inflammatory. Later bone scan was done which showed hot spot in S2-3 vertebrae. CT scan of sacrum showed sclerotic lesion with surrounding lucency suggestive of osteoid osteoma in right lamina of S3 vertebra. TREATMENT: Patient was later operated for the same by En Bloc resection of the tumour mass. Histopathological examination of the excised mass showed a nidus consisting of a combination of osteoid and woven bone surrounded by osteoblasts, thus confirming the diagnosis of osteoid osteoma. Patient has good relief of pain postoperatively. CONCLUSION: This case is presented because rare location of the lesion had made the diagnosis difficult. The case demonstrates that osteoid osteoma located in sacrum may cause chronic low back pain, and that after excision patient may expect complete relief of his symptoms.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22050**

**ANTERIOR LUMBAR FUSIONS USING RHBMP-2 AND STAND ALONE PEEK CAGES: A PROSPECTIVE ANALYSIS OF FUSION RATES AND CLINICAL OUTCOMES**

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Obtain an anterior lumbar fusion without osseous graft and fixation device is a clinical benefit for the patient. We purpose a clinical and radiological follow-up fusion with a stand alone peek cage filled by rh-BMP2 in 25 patients with 28 cages with a minimum of 6 month follow-up. OUTCOME MEASURES: clinical scales (VAS, Oswestry disability index, SF 36 score) and radiological study (X-ray at 6, 12 and 24 weeks and CT scan at 3 months). 27 patients were enrolled consecutively with a mean age of 46 years. Twelve patients had a previous surgery. Indications are: disc disease without associated hernia (19 cases), with hernia (8 cases), and spondylolysthesis. In two cases, arthrodesis was combined with total disc arthroplasty at upper level. The clinical results become better when fusion is achieved. At 6 months, all patients were fused. In the radiological study, we observe an early osteolysis followed by bone growth in the cage, to obtain a complete fusion at 5 or 6 months. There is one early migration of a cage with secondary stabilisation. There are few complications: one ileus, one ombilical hernia, one hematoma of the wall but no problems with the sacral plexus, and no lesions of the big vessels. This technique obtains a rate of 100% of fusion in 6 months and eliminates complications with iliac crest harvest, and avoids the complications of synthese devices. The high stability of the cage allows the use of a disc arthroplasty of the upper level if it is necessary.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22079**

**REVIEW THE RESULT OF ANTERIOR RADICAL DEBRIDEMENT AND FUSION COMPARE WITH POSTERIOR WEDGE OSTEOTOMY AND INSTRUMENTED FUSION IN THOCOLUMBAR, LUMBAR AND LUMBOSACRAL SPINAL TUBERCULOSIS**

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STUDY DESIGN: Retrospective case analysis. OBJECTIVE: To compare the result of anterior radical debridement and fusion and posterior closing wedge osteotomy with instrumented fusion performed in patients with thoracolumbar, lumbar and lumbosacral spinal tuberculosis. METHODS: Between January 2003 - December 2007, 52 patients with TL, L and LS spinal tuberculosis. (T9-S1) were operated with two techniques. Anterior radical debridement and fusion with iliac strut graft performed in 30 patients and posterior closing wedge osteotomy with instrumented fusion performed in 22 patients. Assessment was based on neurological status, radiological measurement of kyphotic deformity and healing status. The average follow-up period was 16.4 months in anterior group and 14.2 months in posterior group. RESULTS: In patients with severe neurological deficit, 22 of 24 (91.7%) in anterior group and 15 of 17 patients (88.2%) in posterior group had improvement. Kyphotic deformity correction was 41 % in anterior group and 73.5% in posterior group. Fusion was achieved at average of 13.6 months in anterior group and 7.8 months in posterior group. Each group had one pseudarthrosis. CONCLUSIONS: Posterior closing wedge osteotomy and instrumented fusion had as good result as anterior radical debridement and fusion in neurological recovery, better result in correction of deformity and shorter time of fusion.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22088**

**THE RATIONAL USE OF THE INTERSPINOUS DYNAMIC DEVICE (DIAM) - OUR EXPERIENCE**

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Sacral loin rachis degeneration is the outcome of physiological and parapsychological phenomena which bring about a balance alteration of this complex anatomical area. DIAMs fall within a wide gamut of possible tools, all meant to fill the gap between simple, but aggressive interventions on soft parts and extreme interventions aimed at fighting stiffening of the backbone. With this scenario in mind we began in 2005 implanting DIAMs in the loin area, eventually widening its implant range to the sacral loin passage when S1 spinal morphology allowed it. Since we did get outstanding results, we subsequently employed DIAMs also above and below statically stabilised segments. Ever since we treated 71 cases, of which 37 with DIAM only and 34 with both stabilisation and DIAM. Besides undergoing a DIAM implant, patients were also submitted to flavectomy and foraminotomy – where needed – and, only in the instance of an exposed hernia, to herniectomy and in-depth cleansing of the disc. For our pre-operative study of each case we made use of standard and dynamic X-rays as well as Nuclear Magnetic Resonance. Patients were questioned following Oswestry questionnaire during the pre-operational stages and in post-operational check-ups at 1, 4 and 10 months after the operation. Patients were made to stand up the 2nd, 3rd day wearing a lombo-sacral corset. Outcome evaluation was very encouraging and we also had a high compliance. Patients from the first 2 Oswestry groups were submitted to RMN to monitor DIAM-protected disc image evolution over time.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22091**

**ELEVATED SERUM ALBUMIN AND BODY MASS INDEX AS RISK FACTOR FOR WOUND HEALING DISTURBANCES AND PROLONGED HOSPITAL STAY IN SPINE SURGERY**

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Malnutrition has been identified as a risk factor for prolonged hospital stay in elderly patients. Key factors for the nutritional status are the serum albumin level and lymphocyte count. We wanted to study the influence of the nutritional status on the duration of hospital stay and the occurrence of wound healing disturbances in patients undergoing dorsal instrumented fusions of the lumbar spine. We investigated retrospectively 50 consecutive patients after dorsal instrumented fusion of the lumbar spine. Body mass index, diabetes status, age, sex, number of fused levels and nutritional status were assessed. Nutritional status was explored by serum albumin level and lymphocyte count. These parameters were determined with univariate analyses and multivariate regression analyses as risk factors for surgical site infection and for prolonged hospital stay. Elevated body mass index was determined as risk factor for wound healing disturbances and surgical site infection, whereas reduced albumin serum levels were detected as risk factor for prolonged hospital stay after dorsal instrumented spinal surgery. Special care and prolonged antibiotic regimen should be applied in patients with body mass index above 30kg/cm<sup>2</sup> and awareness on nutritional supply could be helpful to prevent malnutrition.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22100**

**LONG-TERM EFFECTS OF POSTERIOR LUMBAR INTERBODY FUSION ON ADJACENT SEGMENTS**

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**PURPOSE:** The purpose of this study was to determine the incidence of adjacent segment degeneration in patients who have undergone posterior lumbar interbody fusion. Surgical management for spondylolisthesis should aim to decompress neural elements and restabilize the affected segment. PLIF with pedicle screw fixation is a most reasonable method for this problem, but there are few literature about long-term results. **METHODS:** Between 1994 and 1999 we treated 124 consecutive patients with PLIF and pedicle screw fixation. Their mean age at the time of the surgery was 36,5 years. The mean follow-up period was 11,4 years. We treated by this procedure Meyerding I-II grade isthmic spondylolisthesis at L5-S1 and L4-L5. The follow-up examination included the Oswestry Disability Index, physical assessment, and radiological evaluation. **RESULTS:** Evaluation based on the Oswestry Disability Index before and after the operation showed a marked improvement from average 358 to 224 point. Unfortunately, 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 adjacent segments was seen over the years. **CONCLUSIONS:** At postoperative follow-up, patients who underwent surgery had significantly better scores for both pain and daily function. The benefits were reduced after ten years. The rigid interbody fusion increases the mechanical stress on the surrounding segments which leads to the proliferation of degenerative pathology.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22132**

**EFFICACY OF PEEK CAGES AND PLATE AUGMENTATION IN THREE-LEVEL ANTERIOR CERVICAL FUSION OF ELDERLY PATIENTS**

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**INTRODUCTION:** To evaluate the clinical efficacy of the three-level anterior cervical arthrodesis with PEEK cages and plate fixation for aged and osteoporotic patients with degenerative cervical spinal disorders. **MATERIALS AND METHODS:** We analyzed 21 patients who had three-level anterior cervical arthrodesis with cage and plate construct for degenerative cervical spinal disorder with at least two years follow-up. We analyzed fusion rate, Cobb angle, adjacent segment degeneration by plain radiographs and CT and complications. Clinical outcomes were analyzed using the SF-36 Physical Composite Score and the ODI. **RESULTS:** Mean radiologic fusion was 12.3 weeks (10-15 weeks) after the surgery. The average angle of the cervical lordosis was 5o preoperatively, 17.6o postoperatively and 16.5o at last follow-up. Degenerative changes of adjacent segments occurred in 3 cases (14.3%), but revision surgery was unnecessary for all cases. In terms of metal-related complications, there were cage subsidence in 9 (14.3%) among the 63 fusion level, which average was 2.8 mm and loosening in 2 (9.5%) with no clinical problems. The SF-36 PCS was 29.5, 43.1 and 66.2, and the ODI was 55.3, 24.6 and 15.9 at preoperative, second postoperative week, and at the last follow-up respectively. **CONCLUSION:** For the aged and osteoporotic patients with degenerative cervical spinal disorders, three-level anterior cervical arthrodesis with PEEK cages and plate fixation reduced pseudarthrosis and adjacent segment degeneration and improved clinical outcomes. This method could be considered as a relatively safe and effective treatment modality.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22148**

**POTENTIAL ROLE OF CERAMICS IN SPINAL SURGERY**

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At present the success of spine surgery is dependent to a large extent on the usage of synthetic biomaterials. In our institute different types of ceramics that underwent extensive experimental and clinic approbation are used. The goal of the study is to analyze results of experimental and clinic works aimed at usage of ceramic materials in spine surgery. **MATERIALS AND METHODS:** Different types of ceramics were studied in animals and in cell culture. The types were corundum, leucosapphire, hydroxylapatite, tricalcium phosphate, biphasic ceramics (hydroxylapatite and tricalcium phosphate in various ratios), hydroxylapatite alloyed by silver, ceramics saturated with cytostatics and antibiotics. **RESULTS:** Based on the experimental studies on animals, mathematical modeling using the method of finite elements and biomechanical researches the conception was elaborated to implement the differentiated approach to the usage of grafts made of different types of ceramic materials in low-invasive surgery of cervical and lumbar spine parts. Ceramic grafts of special form made of corundum and lamellar ceramics were developed to reconstruct vertebral interbody support. Granules of porous hydroxylapatite of stoichiometric and non-stoichiometric structure with open-end pores of different diameter are used for filling in bone cavities. Hydroxylapatite alloyed by silver was successfully used for replacement of infected bone cavities. Results of spine surgeries carried out with the usage of ceramic grafts were analyzed. Prospect of their further usage in spine surgery was identified. **CONCLUSION:** Ceramic materials are perspective materials in spine surgery.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22153**

**DEGENERATIVE CHANGES OF ADJACENT SEGMENT AFTER ANTERIOR CERVICAL DISCECTOMY AND FUSION**

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**OBJECTIVES:** To evaluate the factors influencing on the radiographic degenerative change. **Summary of Literature Review:** There is a 25% incidence adjacent segment degeneration after 5 years. **MATERIALS AND METHODS:** From 2002 to 2005, 34 patients (male 23, female 11) who underwent anterior cervical spine fusion using cage or bone block for degenerative cervical spine. We measured the degenerative findings of upper and lower adjacent segment were measured from the pre-operative MRI. The fused segment curvature, disc heights of adjacent segments, displacement of vertebral bodies and angular mobility in the adjacent segments were measured from the pre-operative and the final follow-up lateral views in the neutral position, in both flexion and extension. **RESULTS:** The group with degenerative change showed significantly lordotic angular loss of fusion segments ( $11.9 \pm 3.1^\circ$ ) at the follow-up observation than the group with no degenerative change ( $9.0 \pm 1.1^\circ$ ) ( $p=0.04$ ). In disc height increase of fusion segments, the group with degenerative change showed significantly larger change ( $2.8 \pm 0.2\text{mm}$ ) at follow-up observation than the group with no degenerative change ( $2.2 \pm 0.3\text{mm}$ ) ( $p=0.02$ ). The group with a Grade IV or higher level of pre-operative disc degeneration showed more degenerative changes in adjacent segments than those with Grade III or lower. **CONCLUSIONS:** It is important to preserve the lordotic angle of fused segments and to avoid excessive increase in disc height. The recurrence of neurological will have not associated with the preoperative adjacent segmental degenerative changes in ACDF.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22157**

**CHANGE OF PELVIC TILT BEFORE AND AFTER GAIT IN PATIENTS WITH LUMBAR DEGENERATIVE KYPHOSIS**

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**PURPOSE:** To verify the availability of radiography and gait analysis with analysis the changes of pelvic tilt before and after gait in patients with LDK. **STUDY DESIGN / SETTING:** A retrospective study. **PATIENTS SAMPLE:** We analyzed 18 lumbar degenerative kyphosis patients who didnt have multiple vertebral compression fractures, past history of spinal surgery or surgery for degenerative arthritis of knee or hip, and obesity which makes a marker error in gait analysis. **OUTCOME MEASURE AND METHODS:** Pelvic tilt was evaluated radiologically, linear parameter of gait cycle and kinematic data was obtained in gait analysis. **RESULTS:** Walking velocity was 80.7cm/s, and it largely decreased to 65% of normal. Cause of decreased walking velocity was not decrease of cadence but decrease of stride length. Mean static pelvic tilt in gait analysis was  $1.3 \pm 8.0^\circ$ , which has 8 cases of anterior tilt and 10 cases of posterior tilt. Mean pelvic tilt during gait was  $12.5 \pm 8.2^\circ$ , which has 17 cases of anterior tilt and 1 case of posterior tilt. It was statistically significant difference ( $p < 0.05$ ) and correlation with -0.88 of Pearson correlation coefficient. **DISCUSSION OR CONCLUSIONS:** Though there was no statistical significant, we observed anterior pelvic rotation after gait radiologically. As fatigue of pelvic extensor muscles increase during gait, pelvis tilt anteriorly with statistical significant in gait analysis. Therefore gait analysis is thought to be useful for evaluate the dynamic change of pelvic tilt in patients with LDK.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22229**

**COMPARE SURGICAL OUTCOMES OF 2 DIFFERENCE TECHNIQUES IN CERVICAL LAMINOPLASTY (MINIPLATE V.S. LATERAL MASS SCREW)**

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STUDY DESIGN: Retrospective study. METHODS: A retrospective study review from Mar 2000-Nov 2008 was done. 41 patients of CSM were in this study. We did open door laminoplasty and using titanium miniplate to stabilize open door side in 20 patients and using lateral mass screw with Ethibone anchored to spinous process at hinge side in 21 patients. There are 12 male and 8 female in miniplate group, 20 male and 1 female in screw group. Mean age was  $59.55 \pm 12.26$  (32-75 yrs) in miniplate group and  $62.10 \pm 9.04$  (38-76 yrs) in screw group. RESULTS: Mean op. time of miniplate group was  $214.25 \pm 61.86$  min (115-330 min) and screw group was  $117.14 \pm 21.01$  min (150-240 min) ( $P = 0.007$ ). Intraoperative bl. loss of miniplate was  $487.50 \pm 274.28$  cc (50-1000 cc) and screw was  $445.24 \pm 393.67$  cc (100-1200 cc). LOS-miniplate was  $18.10 \pm 8.60$  dys (8-36 dys) and screw was  $16.43 \pm 6.53$  (8-32 dys.). JOA difference (follow up- preop.) was  $3.5 \pm 2.16$  (0-7) in miniplate and  $3.52 \pm 1.83$  (1-8) in screw group. JOA score (% change) was  $39.16 \pm 29.73$  (0-100) in miniplate and  $39.19 \pm 31.35$  (6.67-133.33) in screw group. Statistical significance association was found in sex difference that more male in screw group and operative time that longer time in miniplate group. CONCLUSIONS: Outcome of both techniques was not difference. Postoperative JOA score was improved 40%.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22239**

**QUANTITATIVE SURFACE ELECTROMYOGRAPHY TOPOGRAPHY FOR LOW BACK PAIN ASSESSMENT**

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Muscle function impairment was found to be low back pain (LBP)-associated. This paper proposed a new assessment tool using surface electromyography (sEMG) topography, which can visualize the sEMG activity in back muscle during dynamic motion. This study was aimed to quantify the pattern features of dynamic sEMG topography from in-vivo lumbar flexion-extension test in healthy subjects and low back pain (LBP) patients, to investigate the potential use of this technique in LBP assessment. SEMG signals were recorded in 100 normal subjects and 14 LBP patients by applying surface EMG electrode array on the low back muscles during forward bending. Root-mean-square (RMS) was calculated, while the topographies of RMS distribution were constructed by cubic spline interpolation. The highest 20% RMS value region of the topography was defined as high activity. The area, width and width/height ratio of high activity were calculated and compared between normal and LBP. SEMG topographies in normal subjects showed symmetrical muscle activities, while LBP patients did not come up with regular patterns. The high activity region on LBP patients showed significantly larger area ( $p < 0.03$ ), width ( $p < 0.01$ ) and width-to-height ratio ( $p < 0.05$ ) than normal subjects. The alternation of pattern in high activity region suggested imbalanced lumbar muscle contraction which might imply abnormal postural coordination strategies in LBP patients. The sEMG topographic morphology was found to be significantly different between LBP patients and normal subjects. This study provides a quantitative and objective approach to investigate muscle function.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22245**

**EFFICIENCY OF SECOND LINE OF DRUGS IN THE MANAGEMENT OF TUBERCULOSIS OF SPINE**

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Tuberculosis of spine commonly occurs in younger individuals producing kyphotic deformity and also neurological deficits. 19 years old female presented complaints of pain and swelling over the dorsolumbar region. On examination, gibbus deformity present, weakness of lower limbs present. Reflexes were exaggerated. Bowel and bladder were normal. Xray shows destruction of D11. MRI showed destruction of D11 with anterior thecal compression. Decompression and posterior stabilization with bone grafting was done, followed patient improved symptomatically. Patient was continued with ATT (DOTS-Regime). Patient reviewed after four months with huge abscess over the operated scar. Abscess was drained and patient was given AKT4 with second line of drug (Ofloxacin) for three months and INH and Rifampicin for five months. Patient improved symptomatically. **CONCLUSION:** The chemotherapy for tuberculosis of spine should be given for eight months with careful monitoring in order to prevent the recurrence.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22273**

**UPPER CERVICAL APPROACH FOR ODONTOID AND CERVICAL SPINE RECONSTRUCTIONS**

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STUDY DESIGN: Retrospective study. METHOD: We did upper cervical spine approach for 7 cases of Odontoid destructions and cervical spine lesions (4 cases of Odontoid destruction-Metastasis CA lung to Odontoid, Metastasis CA lung to C2-4, TB of Odontoid and Metastasis CA thyroid to C2-3, 1 Displaced Hangman fracture, 1 Metastasis CA colon to C3 and 1 Abscess at C1-2. There were 4 female and 3 male, age range between 30-72 yrs. 5 cases were performed by posterior stabilization from occiput to lower cervical spine followed by anterior reconstruction and 2 cases were done only anterior surgery. We did transverse skin incision between mandible and hyoid bone at right side of neck. Sternocleidomastoid and carotid sheath were retracted laterally and trachea, esophagus, hypopharynx were retracted medially. Superior thyroid artery was ligated. Submandibular gland, digastric muscles were retracted superiorly. The prevertebral fascia, longus colli and longus capitis were separated in midline and retracted laterally, then we could approach to anterior arch of C1 down to C4. RESULTS: Odontoid process and C2 body were removed out by curette and high speed burr. Anterior reconstruction with PMMA were done in 4 cases of metastasis, Fibula graft in Tuberculosis of C2 and Iliac bone for ACDF C 2-3 in Hangman fracture. There are no complication in our series by using this approach. CONCLUSIONS: This approach is safe and easy to approach anterior arch of C1, tip of odontoid and can extended down to lower cervical spine. It takes a short operative time and can avoid contamination from oropharynx.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22288**

**RECURRENCE OF HEMANGIO-PERICYTOMA INVOLVING L1 VERTEBRAE MANAGED BY CORPECTOMY OF L1 AND FIXATION**

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Hemangi-pericytoma is a rare soft tissue tumour involving the spine. CLINICAL PRESENTATION: We present a 25 year female already operated for a extradural soft tissue mass at L1 vertebra 1 year back with complaints of progressive weakness involving both lower limbs. Her 6 months follow up was uneventful but weakness started thereafter. Her motor power in both hips was 3+ with reduced sensation over L1-L2 dermatome. The histopathological examination confirmed it as Hemangio-Pericytoma. Her repeated MRI showed tumour growth involving the L1 vertebrae and left pedicle. TECHNIQUE: We performed a decompression with corpectomy of L1 Vertebrae and anterior instrumentation with bone graft. After 5 years of follow up patient is asymptomatic with no evidence of recurrence. KEYWORDS: hemangio-pericytoma, recurrence, corpectomy, instrumentation

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22294**

**THE CONCEPT OF NON-FUSION LUMBAR STABILIZATION VS. FUSION, FROM BIOMECHANICAL POINT OF VIEW: THE CLINICAL RESULT OF DYNESYS™ AND DTOTM SYSTEMS**

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The instrumented lumbar fusion was the gold standard surgical solution for the last decades of several degenerative pathologies. However, in course of time has proved some shortcomings of this method: the failed fusion could cause painful pseudoarthrosis, and even a successful fusion alters definitively the physiologic loading and so the whole biomechanics of the lumbar spine, which could result in the so called adjacent level syndrome. These observations have led to the fact, that nowadays a lot of spine surgeons believes that not all lumbar degenerative pathologies has to be fused. The first innovation to replace fusion and treat degenerative disc disease was the different disc prosthesis. The newer development are the non-fusion fixation techniques. They try to maintain the movement of the instrumented segment, limit the range of motion among physiologic conditions, distract the degenerative segment and with this, firstly decrease the load of the disc and the facets and on other hand result in foraminal decompression. In our Institution we have been using the Dynesys™ (Dynamic Neutralization System) and DTOTM (Dynesys Transition Optima) systems provided by Zimmer for two years in well selected cases of lumbar degenerative disc disease, in addition to different rigid transpedicular fixation for fusion. Our experiences show, that with precise patient selection, the non-fusion stabilization have really promising results. It can be concluded, that both of the concepts are well-designed and could be very effective for certain patients, however it is really important in decision making of indication to concern biomechanical point of views.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22315**

**NUMBER AND FUNCTIONAL ACTIVITY OF BONE-MARROW DERIVED ENDOTHELIAL PROGENITOR CELLS INVERSELY CORRELATE WITH DEGREE OF INTERVERTEBRAL DISC DEGENERATION**

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Endothelial progenitor cells (EPCs) are bone marrow derived vascular progenitor cells capable to contribute to reendothelialization and neovascularization. But it is currently unknown whether there are pathogenetic condition-related differences in EPCs number and function in patients with degenerative intervertebral disc. Therefore, we enrolled 28 patients which were classified into five levels (I, II, III, IV, V) by the general Thompson's grading criteria. 9 healthy adults served as controls. Mononuclear cells were isolated, preplated for 3 days and adherent cells were further cultured for 7 days to determine EPCs colony forming units. The numbers of EPCs were counted by flow cytometry (CD34+/-)CD133/KDR) and the migratory activity was determined using a modified Boyden chamber. The number of CD34-negative EPCs, but not CD34-positive EPCs is highest in the V-level. ( $P < 0.001$ ). The overall level of EPCs is lower in patients with severe degeneration ( $P = 0.002$ ). The number of EPC colony forming units was significantly higher (~150%) in samples collected from group I compared with high level group ( $P < 0.001$ ). By multivariate analysis, age was identified as a major independent predictor for impaired EPC migration. These results demonstrate that patients with intervertebral disc degeneration revealed reduced levels and functional impairment of EPCs, which correlated with degree of the disease. Given the important role of EPCs for revascularization of subcondral bone/endplate, the decrease of EPCs numbers and activity may contribute to impaired vascularization in patients with intervertebral disc degeneration.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22322**

**MRI CLASSIFICATION OF INTERSPINOUS LIGAMENT DEGENERATION: INTRAOBSERVER AND INTEROBSERVER RELIABILITY AND THE FREQUENCY OF DISAGREEMENT**

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**BACKGROUND:** Posterior spinal ligament pathology is becoming increasingly recognized as a significant cause of low back pain. Despite the growing clinical importance of interspinous ligament degeneration in low back pain patients, formal reliability studies for the MRI evaluation of interspinous ligament have not been performed. **PURPOSE:** To develop an MRI classification system for interspinous ligament degeneration and to determine its reliability and reproducibility. **STUDY DESIGN:** A comprehensive reliability assessment of MRI interpretations. **PATIENT SAMPLE:** Fifty patients who had low back pain with or without leg discomfort (26 males and 24 females) with a mean age of 48.8 years (range, 23 to 85 years) were studied. **OUTCOME MEASURES:** Intraobserver and interobserver reliability were assessed by kappa statistics. The frequency of disagreement was also identified. **METHODS:** The classification for lumbar interspinous ligament degeneration was developed on the basis of the literature using mid-sagittal T1- and T2-weighted images. Three spine surgeons independently graded a total of 200 interspinous ligament levels in 50 patients. **RESULTS:** The intraobserver agreement was excellent in all readers (kappa, 0.840-0.901). The interobserver agreement was lower as expected, from substantial to excellent (kappa, 0.725-0.818). Overall complete agreement was obtained in 87.8% of all interspinous ligament levels. A difference of 1, 2, and 3 grades occurred in 4.2%, 6.9%, and 1.1%, respectively. **CONCLUSION:** This proposed MRI classification of interspinous ligament degeneration was simple, reliable, and reproducible. Its use for diagnosis, research, and clinical practice can be recommended as a standardized nomenclature.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22366**

**DESMOPLASTIC FIBROMA OF THE SPINE: REPORT OF TWO CASES AND REVIEW OF LITERATURE**

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**BACKGROUND:** Desmoplastic fibroma (DF) of bone is a non-metastasizing osseous tumour with local aggressive appearance and initial diagnosis is often misconstrued. Published cases show a high tendency of local recurrence. **CASE REPORTS:** We present the clinical and radiological data of a male (35 years) and a female (37years) patient suffering from desmoplastic fibroma. Although in literature spinal lesions are severity rare, in our database two lesions located in the spine (C6 and L4) were identified. The first disturbances have been variable: The lesion in C6 was an accidental finding due to a control examination of a thyroid-ca, whereas the relapse-tumour of the L4 induced lumbago and hypaesthesia of the left heel. Due to the importance of the thyroid treatment it was decided to control the lesion in C6 in close intervals. The lumbar tumour was initially treated outside and the first relapse was marginal resected at our department 11 years after the first diagnosis. The bone alterations appeared radiographically lytic and cystic. **DISCUSSION:** The spine is an unusual location of desmoplastic fibroma which arises in 56% at the long tubular bones followed by the mandible. To our knowledge only a few cases are reported to be located in the spine. DF located spinal, is a very untypical tumour and initial symptoms can be very unequal. Due to this dissimilar symptoms and variable histological appearance the diagnosis can be tricky. At least marginal resection should be achieved because intraleasional resected lesions show a local recurrence of 43%.

**Poster**

**Session: Degenerative diseases / Varia - Spine**

**Abstract number: 22563**

**3D IMAGINGS OF LUMBAR INTRASPINAL CYSTIC LESION**

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Three-dimensional CT facet arthrogram (3D-CTF) and discogram (3D-CTD) of intraspinal cystic lesion in the lumbar spine is introduced. Incidentally, facet cyst is defined as intraspinal cyst in communication with the neighboring facet joint, and discal cyst as the cyst in communication with the corresponding intervertebral disc. MATERIALS & METHODS: Eighteen facet cysts and 1 discal cyst of 19 patients (11 male and 8 female; mean age of 66 years) underwent facet joint arthrography for facet cyst or discography for discal cyst, and subsequent CT scanning. Of the 18 facet cysts, 4 were located at L3/L4, 13 at L4/L5, and 1 at L5/S1. The discal cyst was located at L3/L4. Lumbar radiculopathy was demonstrated in 15 patients and cauda equina syndrome in 4; 13 patients were surgically treated. 3D-CT was made using the volume rendering for secondary reconstruction; the region of contrast medium was demonstrated by adjusting the threshold setting. RESULTS: All the cystic lesions were successfully visualized by 3D-CTFs and 3D-CTD. The localization of cysts were 8 in cranial, 4 in middle, and 7 in caudal. In all of surgically resected cases, the localization of cysts in 3D-CT and operative findings were corresponding. CONCLUSION: Using the 3D-CTF and 3D-CTD, it is easy to understand a localization of intraspinal cystic lesion and a relation with facet joint or intervertebral disc. It is also useful for pre-operative planning that can visualize the cyst in 3D, which is usually adherent to the dura mater.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 19865**

**A CASE STUDY OF SIMVASTATIN INDUCED DERMATOMYOSITIS AND ITS CONSEQUENCES**

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Simvastatin (reversible inhibitors of microsomal enzyme 3-Hydroxy 3-methyl glutaryl-Coenzyme A reductase) is a drug widely used for hypercholesterolemia. Causes side-effects but with a very low incidence of myopathy. This drug induced dermatomyositis with rhabdomyolysis induced ARF cases are very rarely found in English speaking literature and very sporadic cases noted and presented, we reported one such case. Male 45 year presented with myalgia both upper limb and pain in lower limb with itching, was taking simvastatin 10 mg daily for having previous M I and IHD and hypercholesterolemia since last one month. Gradually patients condition get worsened and having sever pain, swelling, edema and red skin efflorescence with difficulty in deglutition and moving his limbs. On investigation, muscle enzymes CPK 49,000 u/L (0-190u/l), LDH 1132 u/L (135-225u/L) and serum creatinin 4.06mg/dl. Patient underwent biopsy and confirms myopathy histopathologically. Simvastatin was withdrawn and injectable methyl prednesolone acetate 1gm IV twelve hourly for two days and other supportive medicine. Then on 60mg of prednesolone tablets, Ryles tube feeding and other supportive therapy for ARF. Gradually within four days CPK reduced to 4600u/L. Swelling, pain and red efflorescence over both arm and thigh reduced and gradually patient is mobile. It is important to aware that usage of this group of drugs is wide. Their side effects are rare but it is important to remember their capacity to induce a myopathy, usually reversible upon withdrawal of the drug. But if go unnoticed can cause life threatening complications.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 20490**

**ANTI TUMOR NECROTIC FACTOR AGENTS PROMOTE THE ABILITY OF THE BMP-2 INDUCED ECTOPIC BONE FORMATION**

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Tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) plays key roles in the regulation of inflammation and the subsequent joint destruction in rheumatoid arthritis (RA). Etanercept (ETN), which is a recombinant human soluble TNF receptor and inhibits TNF- $\alpha$ , is effective in the treatment of RA. We investigated the effect ETN on recombinant human bone morphogenetic protein-2 (rhBMP-2) induced ectopic bone formation in vivo. A block copolymer composed of poly-D, L-lactic acid with random insertion of p-dioxanone and polyethylene glycol (PLA-DX-PEG polymer) was used as the delivery system. Each polymer disc (6mm, 30mg) containing 5  $\mu$ g rhBMP-2 were implanted into the left dorsal muscle pouch of mice (n=5). ETN (25mg/human=12.5 $\mu$ g/mice) were administered systemically or locally in a dose-dependent manner. All implants were increased radiodensity at 3 weeks post transplantation, consistent with a significant increase in bone mineral contents, trabecular bone volume and osteoblast number, whereas a decrease in osteoclast number, dose-dependently both systemic and local administration of ETN. No significant difference in body weight and serum data was noted among systemic and local groups during the experimental period. These data suggested that the optimal dose of ETN systemically or locally enhanced the bone inducing capacity of BMP with no apparent systemic adverse effect.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 20812**

**POST OSTEOMALACIC DEFORMED PELVIS; A RARE CAUSE OF APAREUNIA**

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Osteomalacia is rare in developed countries. However it is still very commonly encountered entity in India secondary to dietary deficiency of vitamin D and many prevalent social and cultural practices (purdah). We report a case of old healed osteomalacia in a young female which lead to deformed pelvis and subsequent apareunia. **CASE REPORT:** A 24 year old woman presented with complaints of not being able to have sexual intercourse with her husband since marriage. There was no history of trauma or any other disease in the past. But patient reported that the purdah system was strictly followed in their family. Patient's mother was contacted and she confirmed that patient had an episode of severe pain in both upper and lower limbs when she was five. She could only walk normally six months post treatment, the nature of which is unknown. On vaginal examination, the orifice was markedly narrowed by bony protrusions of the deformed pelvic outlet palpable on each side. Laboratory tests were normal. Radiographs and CT Scan of the pelvis showed bilateral deformities of inferior ischiopubic rami. **Surgery:** Identical incisions were made on the outer borders of the labia majora. The projecting part of the contracted pelvic arch was exposed subperiosteally. Around 4.5 centimeters of ischial rami were excised as to allow easy insertion of three fingers into the vaginal orifice. The post-operative recovery was uneventful and the patient was allowed coitus at three weeks. A roentgenogram and pelvic CT after surgery confirmed the adequacy of surgery.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 20855**

**THE EFFECTS OF INTRAARTICULAR PROPOLIS ADMINISTRATION ON ARTICULAR CARTILAGE DESTRUCTION IN EXPERIMENTAL SEPTIC ARTHRITIS**

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The effects of propolis on articular cartilage destruction in an experimental septic arthritis model were evaluated. Experimental septic arthritis was performed by the intraarticular injection of *Staphylococcus aureus* to the right knees of 32 rabbits. Four groups were formed including control, antibiotic, propolis and propolis-antibiotic. On the seventh day after the inoculation, the knees of the rabbits were evaluated clinically; arthrotomy and irrigation were performed to the all rabbits. Control group did not receive any additional therapy. Intramuscular antibiotic therapy was performed to the antibiotic group during seven days. Intraarticular propolis was administered to the propolis group in single doses for three times for three weeks. Combination of antibiotics and propolis as described in previous groups were administered in propolis-antibiotic group. All of the rabbits were terminated at the end of the eighth week. Septic knee joints were evaluated according to the histological score, scanning electron microscopic (SEM) score and arthritic index which includes clinical signs. When we evaluated the arthritic index, histological score and SEM score, although there were statistically significant differences between the control group and other groups, we did not find significant differences among the three experimental groups, but the scores were better in propolis-antibiotic group than the others. Reduction in the severity of synovial inflammation and destruction of articular cartilage may be due to the antibacterial, antiinflammatory and chondroprotective effects of the propolis. For the prevention of cartilage destruction in septic joints, combination of antibiotic and intraarticular propolis may be used as an alternative therapy.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 20908**

**CHARACTERISTICS PATTERN OF RHEUMATOID ARTHRITIS IN SOUTHERN IRAQ**

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One hundred and fifty patients with rheumatoid arthritis were attending hospital and private laboratories in Basrah, Iraq. There were 30 males and 120 females with age ranged 8-60 years. Residency distribution was 76% urban and 24% rural areas. The highest rate of the disease (30%) was found among age group of 21-40 years old. The laboratory findings were rheumatoid factor, C-Reactive protein and erythrocyte sedimentation rate as 84%, 80% and 86% respectively. The complications noticed were anemia (26%), neuropathies (22%), skeletal muscle signs (10%), respiratory manifestations (7.4%), and reduced sexual activity (18%). Results were discussed according to the radiological observations.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 20952**

**BONE MINERAL DENSITY ACCORDING TO ANSWER IOF's ONE-MINUTE OSTEOPOROSIS RISK TEST**

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AIM: This research aimed at evaluating the bone mineral density according to answer IOFS one-minute osteoporosis risk test. MATERIALS AND METHODS: Firstly, structural-functional state of bone was evaluated by means of an ultrasound bone densitometer ('Achilles'). We have examined 147 postmenopausal women aged 50-69 years (age 59,8 ±0,7). The speed of sound (SOS, m/s), broadband ultrasound attenuation (BUA, dB/MHz) and 'Stiffness' index (SI, %) were measured. Secondly, BMD, T and Z-score of the spine, femoral neck were determined by DXA using a densitometer Prodigy (GE Medical systems). We have examined 73 postmenopausal women aged 50-69 years (age 63,9±0,9). RESULTS: SI at patients with the positive answer to the on II (Have you broken a bone after a minor bump or fall) the question has made 74,0±1,7 %, with negative - 81,2±1,3 %, p = 0,002; on IV (Have you lost more than 3 cm in height) - 71,6±1,7 % and 82±1,2 %, p <0,00001. Significant correlation between the answer to the on II a question and BMD spine (r =-0,29; p=0,012) and BMD femoral neck (r =-0,32; p=0,005); between the answer to the on IV a question and BMD spine (r=0,29; p=0,047) was found. CONCLUSION: Application of IOFs one-minute osteoporosis risk test gives an opportunity to determine structural-functional changes of bone.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 21141**

**PREVALENCE AND RISK FACTORS FOR INADEQUATE SURGICAL RESECTION OF SOFT TISSUE SARCOMAS**

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Planning resection margins for soft tissue sarcomas is a compromise between functional sacrifice and therapeutic safety. However, histological analysis of resection margins often shows that the preoperative objective has not been achieved. We studied the prevalence and factors of risk for this outcome. This was a prospective monocentric study of 133 patients. The resection objectives, pathological and operative reports were examined. Margins were classified according to the UICC. This data was included with patient and tumour related preoperative information. Inadequate resection was noted as planned R0 with R1 or R2 outcome. The prevalence of inadequate resection was 25.2%. Among the factors analysed, the aspect of tumor limits was significantly related to poor surgical results (odds ratio 2.85 [1.47-5.52],  $p < 0.005$ ). No other significant risk factor was identified. The microscopic aspect of the proliferation limits at the final pathology examination is for us significantly associated with inadequate resection, but we identified no preoperatively known risk factor. The current classification for resection margins lacks precision in defining the risk for inadequate resection. R1 resections are particularly difficult to appreciate. This appears to be the source of the difficulties encountered in interpreting pathology samples and choosing the right treatment. Further follow-up is needed to clarify such questions. We conclude that where resection margins are thin, the definition of R0 or R1 resections should be clarified to optimize therapeutic management. Potential risk factors for inadequate resection such as tumor limits should be taken into account and further studied.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 21493**

**CROSS-SECTIONAL AND EPIDEMIOLOGIC STUDY OF FALL, FRACTURE AND POSTURE; IS ORTHOPAEDICS POSSIBLE TO IMPROVE QOL IN THE ELDERLY?**

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**INTRODUCTION:** In order to maintain and improve QOL in the elderly, it is generally accepted that musculoskeletal system is important. The purpose of this study was to search how self-assessment of body image, fall and fracture affect QOL. **METHODS:** In this study, 770 people (341 men and 429 women, average age 62 years) were interviewed regarding fear of fall, fear of fracture and impression of posture. And experience of fall in past-one-year, experience of fracture caused by fall, general health perception, social participation, subjective happiness and patient satisfaction were also assessed. We hypothesize that subjective impression regarding body such as fear of fall, fear of fracture and impression of posture worsen general health perception and then affect social participation, subjective happiness and patient satisfaction. In order to prove this hypothesis, path analysis was done systematically. **RESULTS:** Fear of fall, fear of fracture and impression of posture were correlated with each respectively. These were especially correlated with the degree of physical health. Social participation, subjective happiness and patient satisfaction were closely correlated to physical function status. **DISCUSSION AND CONCLUSION:** This result suggests that the improvement and/or prevention of fear of fall, fear of fracture and impression of posture might have possibility to improve health status and QOL. And this also suggests that orthopaedic approaches such as fall prevention and osteoporosis treatment is theoretically important for maintain health status and QOL. In order to prove this theory, prospective controlled study should be needed.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 21832**

**BREAST CARCINOMA WITH FIRST SYMPTOMATOLOGY IN BONE - A CASE REPORT IN A YOUNG MALE**

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The incidence of the Breast carcinoma in female at the 4th decade of life or more are 1:9, in male is 1:400 (0.0002%) vs. woman; always in elderly men. The incidence of metastasis to the economy is as follows: Lymphatic, pulmonary, brain, bone and liver. Actually there are no reports of bone as first metastasis in male. We report a 33 years old male with lumbar and proximal femoral gradual pain with no more symptoms, previously analyzed by a general M.D. an Orthopaedic Surgeon and Neurologist surgeon. Our First interview: the physical exam presented a claudicate gear, groin and trochanteric pain with negative log roll. The patient brought an anteroposterior and lateral lumbar MNR and x-ray, the MNR with evidence of heterogenic images in the lumbar column and a cystic image in L5. We request a pelvic and a AP and lateral femoral x-ray, in the pelvic one with a radiolucent 8x4 cm image in the ceiling of the acetabulum, the other one 2x1 image in the intertrochanteric area. All laboratories were normal, including alkaline phosphatase, LDH and negative Bence Jones Protein. We interconsult to an Oncologist M.D. that report a soft hyperemia, orange skin and volume growth in the left nipple and areola zone. The Biopsy reported Breast carcinoma. The gamagraphy only reported METS to pelvic and femoral bone.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 21837**

**INCIDENCE OF BONE LESIONS IN MULTIPLE MYELOMA AT THE HOSPITAL ESPAÑOL DE MÉXICO**

Miguel Angel CLARA ALTAMIRANO, Enrique CALETI, Juan Gabino GOMEZ-MONT, Carlos SUAREZ, Cesáreo TRUEBA, Félix GIL, Armando ARRATIA

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**OBJECTIVE:** To determine the sites of most frequent bone lesion in multiple myeloma as well as the radiographic features of these lesions in the Hospital Español de México. We performed a retrospective study of 56 patients with confirmed diagnosis of multiple myeloma in the period between 2002 and 2009. In each case, determined the bone lesion according to the scale of Durie - Salmon. Data were collected from database review of Orthopedics and Hematooncology, which reflected the characteristics of patients, information about the procedure, its complications and periodic evaluations. **DISCUSSION:** There are two aspects in the care of multiple myeloma: a cytostatic therapy is disease-specific and the other the treatment of various complications. Among the latter are of great importance for the lesions and the frequency with serious consequences for the patient. Mielomatose bone involvement may present as an osteolytic lesion as a pathological fracture or severe osteoporosis. In our series the spine, the lumbar region of dominance is the most frequent site of involvement. The goals of treatment of injuries are relieve pain, remove the nerve compression, restore the stability to the spine and promote the mobility of the patient, thereby increasing the quality of life.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 21839**

**TUMORAL SPINE, A CASE PRESENTATION**

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Many factors interfere with the precise diagnosis of the bone tumors, including the X-Ray characteristics that may provide malignancy, benignity and occasionally the precise correlation with the histological diagnosis. The case we are presenting is of a multiple myeloma related with X-Ray and pathology diagnosis; evaluating the first approach of the patient and the way we obtained the precise diagnosis. We present a male patient 56 years old, referring sudden pain in lumbar spine; he was hospitalized for analgesic treatment and cabinet protocol. FINDINGS: Lumbar anteroposterior and lateral X-Ray with compression fracture of 12ve dorsal vertebrae. Three months later, the patient came back with the same characteristic pain; now with a fracture compression of D9, D12 and 1st and 2nd lumbar vertebrae. Laboratory results showed GSV of 134, Calcium 11.8, Uric Acid 10. The MNR with collapse of D12, L1 and L2. The total urine protein account in 24 hours was 820 mg/dl. Protein electrophoresis: IgA 2860, IgG 312, IgM 20. Monoclonal gamopathy with IgA Kappa. Metastatic bone series with osteogenic reaction in vertebrae bodies of D10, L1 and L2. The Medullar Marrow aspiration with Plasmocytosis of 20% in primitive cells and prominent nucleotids. Despite being the most frequent malignant bone tumor, the multiple myeloma diagnosis is underestimated. The approach to the patient is multifactor and multidirectional and it should always lead to suspect in first instance that there is a correlation in causality and casualty related to symptoms and cabinet studies.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 21843**

**ATYPICAL ACUTE EXUDATIVE PRESENTATION OF OSTEOARTICULAR TUBERCULOSIS - NOT SO COLD ABSCESS**

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**INTRODUCTION:** The classical presentation of Osteoarticular Tuberculosis (TB) is described as that of chronic symptomatology. We present 23 cases of Osteoarticular Tuberculosis (proven by bacteriology/ Fine Needle Aspiration Cytology/ Biopsy) who had an acute presentation with history of only few days of symptomatology and acute signs of inflammation. **MATERIAL AND METHODS:** 23 patients with age range 1-62 years, Duration of symptoms ranged from 5 days to 19 days. 18 had acute fever of more than 1010 F at presentation. The regional distribution was as follows: Sternoclavicular joint-3, Acromioclavicular joint-1, Elbow joint-1, Hand-3, Long bone (diaphyseal area)- 2, Long bone (metaphyseal area)- 2, Soft tissue tubercular abscess-1, Spine with acute abscess in the back -2, Hip (with acute pathological dislocation)-1, Knee-2, Ankle-2, Heel with calcaneal involvement- 2, foot (Tarsal and Metatarsal area)-1. Five of these patients had telltale signs of tubercular infection in the past. 16 of these patients were initially subjected to Incision and Drainage, thinking them to be pyogenic infections. The diagnosis was proved by Polymerase Chain Reaction (PCR) for Mycobacterium tuberculosis in 12, FNAC in 7, and histopathology in 4 cases. **RESULTS:** All patients responded to Antitubercular Therapy and indicated orthopaedic treatment. **CONCLUSIONS:** Contrary to the popular belief and notion osteoarticular tuberculosis can present in an acute manner, either because of different host immune responses or rapid collection in a preformed anatomic space (like beneath the lax skin of hand and feet) or in subcutaneous locations (pretibial diaphyseal area, sternoclavicular or acromioclavicular joint).

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 22040**

**QUALITY OF DOCUMENTATION IN ORTHOPAEDIC NOTES**

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**INTRODUCTION:** The Clinical Negligence Scheme for Trusts (CNST) makes recommendations to help maintain the quality of documentation in the medical records of the patients. We carried out an audit to check the quality of documentation in the notes to see if they are in keeping with the recommendations of the CNST. **METHODS:** Notes of 30 in-patients were chosen randomly from the orthopaedic wards. 3 different people assessed the notes to reduce bias. The first cycle of the audit chain involved data collection in March 2008 on the following points: Legibility, Dated, Timed, Signed, Author of the entry and At least 3 times a week. Data was assessed and it was found that the quality of documentation was grossly deficient. The junior doctors were given formal training in the correct way of making an entry in the hospital documents of the patients. A second chain audit was performed in four months time in July 2008, to check if the quality of the documentation had improved. **RESULTS:** It was found that there was a remarkable improvement in all the specified parameters. **CONCLUSION:** The quality of documentation in the medical records in our department was not very good. However, a simple reminder to the junior doctors on the correct recommendations for documentation made a vast improvement.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 22115**

**LONG TERM OUTCOME OF LOWER-DOSE MTX AND INFLIXIMAB THERAPY IN JAPANESE PATIENTS WITH RA**

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**BACKGROUND:** Biologics targeting TNF have brought about a paradigm shift in the treatment of rheumatoid arthritis (RA). In infliximab therapy, methotrexate (MTX) is necessary for patients with RA. In Japan, a lower dose less than 8mg per week of MTX is dispensed than that used in the US and many European countries, 15 to 20mg per week. In Japan compared with US and Europe, MTX is less than half dose and infliximab is less than a one-third dose. Nevertheless, we can experience that MTX is discontinued for adverse effect or toxicity. **PURPOSE:** We compared long term outcome of lower-dose MTX group (less than 4mg per week) and standard-dose MTX group (above 6mg per week) in infliximab therapy for Japanese patients with RA. **METHODS:** One hundred thirty three patients with refractory RA were treated with intravenous infliximab. One hundred five patients underwent lower-dose MTX therapy, and 28 patients underwent standard-dose MTX therapy. Treatment responses at 54 weeks or LOCF were assessed by EULAR response criteria in comparison with two groups. **RESULTS:** Eighty five patients (81%) of lower-dose MTX group and 23 patients (82%) of standard-dose MTX group completed 54 weeks of infliximab treatment. EULAR response criteria-good, moderate, and no response were 43.8, 22.9 and 33.3%, respectively in lower-dose group, and were 46.4, 17.9 and 35.7%, respectively in standard-dose group. Outcome in lower-dose MTX group was not statistically different from standard-dose group. **CONCLUSION:** Lower-dose MTX and infliximab therapy was effective in Japanese patients with RA.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 22269**

**CLINICAL AND HISTOLOGICAL RESULTS USING OF A BIPHASIC MACROPOROUS CERAMIC (CERAFORM®) AS BONE SUBSTITUTE**

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Our purpose was to investigate intraoperative manoeuvrability, clinical short and medium term tolerability, radiological and histological integration of a new biphasic macroporous synthetic bone substitute (CERAFORM®). Between 2001- 2007, 43 patients with different pathological conditions requiring bone substitution have been followed up in Rehabilitation Hospital Iasi, Romania. Clinical indications: benign bone tumours/bone dystrophies (4 cases, 9,3%) 1 malignant tumour (2,3%) spinal fusions for spinal deformities correction (14 cases, 32,5%); revision total hip arthroplasty (2 cases, 4,6%) joint fusions (4 cases, 9.3%). non-union (6 cases, 13,9%), fresh fractures (4 cases 9,3%) osteitis (4 cases, 9.3%). After 12 months, X - ray examination was performed once a year. CERAFORM® was used as single substitute in 14 cases (32, 55%) and mixed with autograft in 29 cases (67, 44%) Total operating time and blood loss in spinal fusion interventions decreased (average 30 minutes and 1±2 units per patient, respectively) our case series collected no material intolerance. Clinical and radiological integration of substitute was demonstrated in 6-12 months, 9 (20, 9%) cases of delayed union were treated with longer immobilization time. Physical properties of the substitute allows good filling of bone defects, additional autograft and/or osteosynthesis hardware is needed for improving mechanical stability. Clinical tolerability is proven by lack of graft rejection or local intolerance phenomena. Radiological absence of substitute at 12 months after implantation stands for a rapid integration in the receiver bone.

**Poster**

**Session: Degenerative diseases / Varia - Systemic**

**Abstract number: 22518**

**HIGHLY FOCUSED ULTRASOUND: MILD HYPERTHERMIA IN BONE TISSUE**

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In many cancer patients, multi-drug resistant bone metastases appears in the late stages of cancer. Chemotherapy can be limited in reaching its therapeutic site and causes systemic side effects limiting the dose given. Heat activated anti-cancer drug carriers represents a way of achieving a more localized delivery of anti-cancer agents reducing systemic side effects of conventional chemotherapy. Mild (41.5°C) local hyperthermia will not cause damage to tissue when treatment period is below one hour. Highly focused ultrasound is a safe and non-invasive way of inducing mild hyperthermia. The aim was to perform controlled heating to 41.5°C in the femur of New Zealand White Rabbits using a custom made ultrasound transducer submerged in a waterbath. The Rabbits were placed in special holders on top of the waterbath, allowing for ultrasound to pass through the tissue. Three mm. drill holes were made in the femurs on the other side of where the ultrasound beam passed in and a temperature probe was inserted prior to heating. Results showed the feasibility of producing a localized mild hyperthermia in the femoral bone. This provides a useful model for testing heat activated drug carriers in animal tumor models.

**Poster**

**Session: Degenerative diseases / Varia - Tibia/Fibula**

**Abstract number: 19459**

**LONG BONE DEFORMITIES CLASSIFICATION**

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AIM: To develop practical long bone deformities classification, which will help orthopedic surgeons to determine optimal variant of external fixator according to the type of deformity: traditional Ilizarov frame or computer-assisted devices like SUV-Frame or Taylor Spatial Frame? METHODS: While characterizing the planes of the deformity standard anterior-posterior and lateral view x-ray examination is used. For determination of rotation clinical examination data and computer tomography are analyzed. RESULTS: In classification offered long bone deformities are divided into one-, two-, three plane ones. Every type of bone fragments displacement is defined as a deformity component in each of the planes: shortening (lengthening), translation, angulation, rotation. Thus the deformities can be: one-, two-, three-, four-, five-, six-component. In general there are 33 types of deformities (<http://rniito.org/solomin>). CONCLUSION: According to the classification all of the deformities can be divided into simple (one-plane - one-component and one-plane - two-components), middle (two-planes - two-components), and complex type (two-planes - three-components and three-planes - multicomponent). In treatment of simple deformities the use of Ilizarov device is expedient. In treatment of complex deformities the use of computer-assisted devices (SUV-Frame, TSF) is preferable. In treatment of middle deformities the choice between the devices depends on the surgeons experience and skills.

**Poster**

**Session: Degenerative diseases / Varia - Tibia/Fibula**

**Abstract number: 19460**

**ILIZAROV METHOD IN FEMUR AND SHIN DEFORMITY CORRECTION: THE ANALYSIS OF 101 CASES**

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AIM: To analyze results of femur and shin correction using Ilizarov device. METHODS: 67 cases of shin and 34 cases of femur deformities correction were analyzed. According to deformity classification ([www.rniito.org/solomin](http://www.rniito.org/solomin)) all the deformities were divided into simple, middle, and complex. RESULTS: Our patients had simple type of deformity in 10%, middle - in 60% and complex type - in 30%. All the components of the deformity were corrected step by step for frontal and saggital planes. The time of deformity correction was in average: for simple deformities - 10-25 days, for complex - 15-50 days. During the deformity correction Ilizarov hinges were changed from one to five times. After deformity correction MAD was 0-5 mm 14%, 5-10 mm 76%, > 10 mm - 10%. Complications were found in 15% of femur cases and 8,4% of shin cases: pin-tract infection - 9,4% for femur and 5,6% for shin, breakage of a transosseus element or failure of a device unit - 3,7% for femur; malunion or nonunion, formation of a hypoplastic distraction regenerate - 1,9% for femur and 0,7% for shin; refracture, secondary deformity- 2,1% for shin. CONCLUSION: Deformity correction using Ilizarov method is effective and can be used in all the types of the deformities. But in two-three plane three-four component deformities the use of computer-assisted devices (SUV-Frame, Taylor Spatial Frame) is prospective.

**Poster**

**Session: Degenerative diseases / Varia - Tibia/Fibula**

**Abstract number: 21619**

**THE EFFECTS OF ULTRASONIC ENERGY ON RATE OF DECALCIFICATION OF RAT BONE IMMERSSED IN EDTA**

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The aim of this study was to assess the change in rate of decalcification by ultrasonic agitation in ethylene diamine tetra-acetic acid (EDTA) compared to EDTA exposure alone. Forty rat tibiae were split equally into four groups. Group A underwent no decalcification. Groups B, C and D underwent 7, 14 and 21 hours of sonification in 10% EDTA respectively. Additionally a control bone was submerged in 10% EDTA without sonification for a total of 288 hours. X-rays were taken of the bones subjected to ultrasonic agitation before and after decalcification. The control bone was X-rayed every 48 hours. All X-rays were corrected for background heel effect inhomogeneities. X-ray images were taken with an Aluminium (Al) step wedge in the exposure. A calibration curve between Al-thickness and grey level was used to provide an equivalent Al thickness (mmAl) for each bone. This was normalised for bone thickness to provide a density measurement in %. The following normalised Al X-ray density was found: [mean  $\pm$  SD] Group A (control): 100% $\pm$ 0. Group B (7 hours): 63% $\pm$ 9. Group C (14 hours): 51% $\pm$ 10. Group D (21 hours): 40% $\pm$ 14. The control bone had the following normalised Al X-ray density: 48h:83%; 96h:86%; 144h:52%; 192h:17%; 240h:14%; 288h:12%. It can be seen that in these experiments, action of ultrasound increased the rate of decalcification dramatically. Similar levels of decalcification were found after 14 hours sonification in EDTA as 144 hours of EDTA exposure alone (approximately 1000% rate increase).

**Poster**

**Session: Minimally Invasive Surgery - Ankle/Foot**

**Abstract number: 20133**

**MINIMALLY INVASIVE SURGERY OF METATARSALGIA**

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**PURPOSE:** We have reviewed 100 cases of MIS of metatarsalgia. We have divided metatarsalgia in two groups: static metatarsalgia or second rocker and progressive metatarsalgia or third rocker. **METHODS:** One hundred cases were operated during 2003. 40% were of second rocker and 60% of third rocker. 91% were women and 9% men. All the patients were operated with distal osteotomies of the metatarsal. We used special tools of MIS. The patients walked immediately with a special shoe. In the same operation were operated hammer toes. The more frequent complication was transfer metatarsalgia. The follow up was of 18 months. **RESULTS:** We have had 90% of good or very good results. In second rocker metatarsalgia we tried to elevate the head of the metatarsal and in third rocker we tried to shorten the metatarsal. **CONCLUSIONS:** After this series we concluded that MIS is a good treatment of metatarsalgia.

**Poster**

**Session: Minimally Invasive Surgery - Ankle/Foot**

**Abstract number: 21351**

**SUSPECTED FOREIGN BODY, DOES IT REALLY EXIST? A CASE REPORT**

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Foreign bodies retained in the soft tissues which consist of wooden or metal splinters or glass shards are a common reason for medical consultation and this also applies in the emergency setting. Radiographs have been used to identify foreign bodies and fluoroscopy has been used for guidance during surgical removal. A 21-year-old patient presented to our clinic with a painful foreign body retained in the soft tissue of his left foot. Plain radiographs showed a metallic foreign body localized dorsally just beneath the skin at the level of talonavicular joint. Surgery under local anaesthesia was performed. However, the foreign body could not be found. Fluoroscopy was used for guidance. Although the fluoroscopy did not reveal any evidence of foreign body, the patient insisted that he had a foreign body on his foot. X-ray results were negative for a foreign body as well. Poor and suspicious informations given by the patient, lead us review the patients history carefully. We noticed that the patient presented to our clinic previously and his previous radiographs showed a different foreign body in a different localization. We assumed that the patient intentionally put the foreign body on his foot in the course of radiographic examination with a purpose of secondary gain. In conclusion, if there is a suspected retained foreign body embedded in the soft tissue, the patient should be quite carefully cross questioned and examined with the imaging techniques before any surgical procedure. This initial step is crucial for avoiding injury to surrounding structures.

**Poster**

**Session: Minimally Invasive Surgery - Ankle/Foot**

**Abstract number: 21691**

**ENDOSCOPIC PARTIAL PLANTAR FASCIOTOMY FOR THE TREATMENT OF PLANTAR FASCIITIS**

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**PURPOSE:** To investigate the surgical treatment outcome and limitation of the endoscopic partial plantar fasciotomy for the treatment of plantar fasciitis. **MATERIALS AND METHODS:** 6 feet of 5 patients that had undergone the endoscopic partial plantar fasciotomy were followed at least 6 months. Their mean age was 35.8 years. We performed the endoscopic surgery under spinal anesthesia. A medial portal is developed at the insertion of plantar fascia into calcaneus using the imageintensifire, and the endoscopic cannula was introduced into the area created the insertion of plantar fascia into calcaneus, plantar fascia and calcaneus. The lateral portal established by the inside-out technique. An arthroscopic shaver was used for visualization, taking care to shave soft tissue, synovium and a part of the flexor digitrum brevis. The heel spur was resected before releasing the plantar fascia using an arthroscopic burr. After exposing the planter fascia, the medial half of it was released using electric devices. One week after operation, patients were allowed immediate full weight bearing on the foot. **RESULTS:** The mean AOFAS score improved 64.2 to 92.0. Though walking pain was decreased at a month after operation, it took 11.2 weeks for walking with no pain. **CONCLUSION:** A short term outcome was favorable for the endoscopic partial plantar fasciotomy. We regarded that the endoscopic partial plantar fasciotomy was less invading operation and postoperative pain was little. In fact, it took 11.2 weeks for walking with no pain and there was the limitation of early sports return.

**Poster**

**Session: Minimally Invasive Surgery - Ankle/Foot**

**Abstract number: 22013**

**THE ANKLE ARTHROSCOPY EFFECTIVE FOR TREATING IN CHRONIC ANKLE ANTERIOR PAIN - THE RESULTS OF DIAGNOSTIC AND THERAPEUTIC OPTIONS**

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AIM: Ankle arthroscopy is accepted and well used diagnostic and therapeutic method for patients suffering from chronically ankle pain. Based on own experiences we present the principles of clinical examination, defining indications for both diagnostic and therapeutic ankle arthroscopy. MATERIALS AND METHODS: Retrospective analysis of the medical documentation, therapeutic management, evaluation of the follow-up results. All patients were evaluated preoperatively, at 6 weeks and 6 months and 9 months. At the time of follow-up averaging 14 months patients were evaluated by questionnaire, the Foot and Ankle Society Orthopaedic Scale (FAOAS) score and radiographs. RESULTS: From 2007 to 2009 we performed 54 (31 men and 23 women) ankle arthroscopy. Forty seven (87%) patients (28 men and 19 women, 24 right and 23 left ankles) applied to follow-up examination. The mean follow-up was 14 months. The average age was 27,5 years (17-71). At 9 months 47 patients rated the results of the operations as good 18 (38%) and excellent 21 (44%), 7 (14 %) as fair and 1 as poor. 38 patients were subjectively satisfied of the surgery. Median preoperative duration of symptoms was 3 years. Most importantly, no significant complications were encountered. After the arthroscopy specialist physiotherapy and rehabilitation was performed. Complications included three patients with temporary numbness in the scar region and one patient with temporary ankle stiffness. CONCLUSIONS: Anterior ankle arthroscopy is a safe procedure that requires limited operation time and results in a high percentage of good and excellent clinical results with a significant improvement.

**Poster**

**Session: Minimally Invasive Surgery - Ankle/Foot**

**Abstract number: 22203**

**SHORTNESS OF THE FOURTH TOE**

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Shortness of the fourth toe is a rare problem. The aim of this study is to evaluate the validity of gradual distraction of the fourth metatarsal to tackle this problem in adults. **MATERIALS AND METHODS:** From 1993 till 2003, 6 cases of congenital shortening of the fourth metatarsal were referred to our center. 5 cases were bilateral [total: 11 feet]. Age of patients ranged from 19 - 30 years [average 23 years]. Shortening ranged from 8mm-24mm [15%-64% of the original length]. The frame is unilateral with two proximal and two distal screws placed on the dorsolateral aspect. After the application of the screws, the frame was temporary removed and osteotomy was performed in the middle through lem incision. Then the frame was applied. After a waiting period of 12 days, distraction started at a rate of 0.75mm per day. Evaluation depended upon the achievement of the target length, angulation, pain & satisfaction of the patient. **RESULTS:** There were 8 excellent & 3 good results after an average follow up of 2.5y [range 6 months - 6 years]. The average healing index was 45 days per cm. Complications included mild pin tract infection in 9 cases which responded to antibiotics. Subluxation of the metatarsophalangeal joint developed in one case. **CONCLUSION:** We recommend gradual lengthening of the 4th metatarsal as the treatment of choice for shortness of the 4th toe. We do not recommend soft tissue release or fixation of the metatarsophalangeal joint to guard against displacement.

**Poster**

**Session: Minimally Invasive Surgery - Forearm**

**Abstract number: 20650**

**TUBERCULOSIS OF THE FOREARM: A CASE REPORT**

Elias FOTIADIS, Apostolos GKANTSOS, Theodoros SVARNAS, Alexis PAPADOPOULOS, Eustathios KENANIDIS, Efthimios ILIOPOULOS, Thomas NTOVAS

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**BACKGROUND:** Tuberculosis usually attacks the lungs, but seldom can also affect the bones. **CASE REPORT:** We describe an unusual case of a recurrent tuberculous cyst of the right forearm and hand. An 81 year old lady complained for aggravated hand and forearm pain for the last two years, especially during the day. However, she never asked medical help. The clinical examination showed that this cyst had characteristics of a ganglion. Full excision of the cyst was performed. However, we found a thick wall cyst with granulomatous inflammation, intraoperatively. Histologic findings demonstrate granulomatosis similar as TBC but negative in Giel-Nielsen test. A meticulous radiographic examination of the patient was performed. CT showed several lytic areas in the distal radius, ulna and carpal bones. CT of the thorax demonstrated several signs similar to Tbc. Mantoux test was positive. The patient had no health problems or coexisting active pulmonary disease. Postoperatively the patient was free of symptoms for 1 month. She had recurrence of the cyst at the same time, as well. A second surgical procedure was performed and full excision of the soft tissue mass was achieved. This histological sample found to be similar to tuberculus tissue. The patient had been receiving antituberculous chemotherapy for at least 8 months at the time of diagnosis. No recurrence occurred in the last 6 months after the end of anti-TBC chemotherapy. **Conclusion:** Extra-pulmonary tuberculosis must be kept in mind in the diagnosis of slowly growing tumors and chronic wounds in the upper extremity.

**Poster**

**Session: Minimally Invasive Surgery - Hand/Wrist**

**Abstract number: 20649**

**GIANT CELL TUMOUR OF TENDON SHEATH**

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**BACKGROUND:** Giant cell tumour of tendon sheath is the second most common tumor of the hand. Different names have been used to describe these lesions such as giant cell tumour of tendon sheath, pigmented villonodular synovitis, fibrous xanthoma, benign synovioma and sclerosing haemangioma, because its exact pathologic nature is unknown. **AIM:** To present a case of a giant cell tumour of tendon sheath, of the left index in a 38 year old man and the best way of treatment. **CASE REPORT:** A 38 year old driver complained for a mass in the proximal phalanx of the left index that grows up slowly in the last year. Clinical examination revealed that this subcutaneous mass was mobile, solid and painless. Neurovascular structures were intact. Radiography of the hand did not show bone lesion. We treated this lesion surgically. A marginal excision of the mass was performed with topical anesthesia. The lesion presented macroscopically as a yellow whitish well circumscribed, capsulated, lobulated mass, with diameter approximately 1,2cm. It was characterized microscopically by the accumulation of histiocyte - like cells, macrophage cells, and the presence of giant cells. The diagnosis was giant cell tumour of the tendon sheath without evidence of malignancy. The patient is free of symptoms and there is no evidence of recurrence in a period of two years. **CONCLUSION:** Giant cell tumour of tendon sheath, is a benign, slowly growing lesion with good prognosis when a marginal excision of the lesion is performed.

**Poster**

**Session: Minimally Invasive Surgery - Hand/Wrist**

**Abstract number: 22199**

**INVESTIGATION OF SAFETY METHOD IN SUPRACLAVICULAR BRACHIAL PLEXUS ANESTHESIA USING THORACIC 3D-CT FOR UPPER EXTREMITY SURGERY**

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**INTRODUCTION:** Some believe in that brachial plexus anesthesia is one of the most challenging procedures thinking about the risk of pneumothorax as a complication. However brachial plexus anesthesia has several advantages that could reduce tourniquet pain and enable to perform the operation around shoulder and upper arm. Recently the series of ultrasound-guided supraclavicular block were reported to avoid pneumothorax. Yet it needs ultrasound apparatus and fully trained doctors. **PURPOSE:** First purpose is to investigate the safety needle direction for supraclavicular brachial plexus anesthesia using thoracic 3D-CT to avoid pneumothorax, and second is to report our clinical experiences in hand surgery. **MATERIALS AND METHODS:** <STUDY#1> In ten patients (male, averaged 63.7 years old) without any thoracic disorder, thoracic 3D-CT were reviewed. We investigate the safety needle direction laterally not to puncture lung between 1st and 2nd rib in different downward angle (0,30 and 60 degrees). <STUDY#2> The supraclavicular brachial plexus blockade performed in the direction laterally (40 degrees) and downward (approximately 40 degrees) to 87 patients who had undergone hand surgery. Complications were reviewed. **RESULTS:** <STUDY#1> The safety directions that the space between 1st and 2nd rib would disappear were averaged over 35.1 (23-46)° laterally in 0° downward, over 35.7 (20-50)° in 30° and over 33.5° (11-49) in 60°. <STUDY#2> Concerning the complications, there were no permanent neural symptom and three transient neural symptoms (numbness from 20 days to 18 weeks). And no patient complained anterior chest symptom suspected pneumothorax.

**Poster**

**Session: Minimally Invasive Surgery - Hand/Wrist**

**Abstract number: 22572**

**PRELIMINARY REPORT OF PERCUTANEOUS TRIGGER FINGER RELEASE BY KS1 INSTRUMENT**

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Now open resection of A-1 pulley is the standard treatment for trigger finger after failed conservative treatment. However, this procedure is always done in the operative room. Percutaneous release with either needles or special instrumentations is an alternative treatment for trigger fingers. Although it is convenient and can be done in an office setting, the injury to flexor tendon, A-2 pulley or neurovascular structure and failure of A-1 pulley release remains the problem of these techniques. Korat-Satja 1 percutaneous trigger release instrument (KS1) and feel and pull technique are developed in order to solve these problems. **OBJECTIVE:** To evaluate the short-term results and possible complications of percutaneous release of A-1 pulley using KS1 instrument and feel and pull technique for the treatment of trigger finger. **PATIENTS AND METHODS:** 30 Patients (39 fingers) who were diagnosed as stage 2 or 3 trigger fingers. They were treated by percutaneous release with KS1 instruments using feel and pull technique. After percutaneous release, surgical exploration was performed to evaluate the completeness of percutaneous release and the injury to nearby structures. **RESULT:** Complete anatomical release of the A-1 pulley was obtained in all fingers without tendon, nerve, vascular or A-2 pulley injury, except one patient who had recurrence of triggering 10 days later. **CONCLUSION:** Due to the high success rate, the low complication rates, the ease of the procedures and its potential to be performed in outpatient department, percutaneous technique by KS1 instrument with feel and pull technique is an appropriate treatment of trigger finger.

**Poster**

**Session: Minimally Invasive Surgery - Hip**

**Abstract number: 21736**

**COMPARATIVE STUDY OF MINIMALLY INVASIVE PFN VERSES DHS. IN GERIATRIC INTERTROCHANTERIC FRACTURES**

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Minimally invasive proximal femoral nailing is far superior to dynamic hip screw in intertrochanteric fractures. This study was done in 186 cases of intertrochanteric fractures in Patna Medical Collage & Hospital, PATNA, INDIA-800001. A 1500 bedded post graduate teaching hospital. DISCUSSION: PFN- is, 1-Minimally invasive; 2- Small incision; 3- Less blood loss; 4-Less stitches; 5- Less hospital stay; 6- More biomechanically stable construct; 7- Early weight bearing; 8- Early wound healing; 9- Early ambulation - In contrast to DHS.

**Poster**

**Session: Minimally Invasive Surgery - Hip**

**Abstract number: 21977**

**MINIMAL INVASIVE SINGLE-INCISION IN TOTAL HIP ARHTROPLASTY (FOUR YEAR EXPERIENCE)**

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The aim of minimal-invasive surgery (MIS) is to reduce soft tissue trauma, decreasing operative blood loss, postoperative pain, hospitalization time while speeding postoperative recovery and improving the cosmetic appearance of the scar. The optimal approach delivers a short skin incision (6-12 cm). Special broach handles and special stems make broaching of the femoral component implantation substantially easier. We present in details the posterior single incision technique used the most frequently in our service. Between September 2004 and 2008 we have been performed MIS operations for THA in 150 cases. The present poster shows the indications, contraindications of the method and our complications occurred, which are lower comparing to the literature.

**Poster**

**Session: Minimally Invasive Surgery - Hip**

**Abstract number: 22071**

**MODIFIED HUETER APPROACH (AMIS) IN TOTAL HIP ARTHROPLASTY**

Pier Giorgio VASINA, Roberto ROSSI, Paolo PALUMBI, Massimo GIUDICE

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Anterior surgical access to the hip for implanting an arthroprosthesis is the only surgical technique allowing intramuscular and internervous access and thus greatly diminishing lesions to periarticular structures. This technique was first introduced some 50 years ago by Robert Judet, using Hueters anterior access. To carry this procedure out one makes use of a specially adapted operating table or a special extention added to an ordinary operating table to facilitate surgical procedures and make such a surgical intervention reproducible. We prefer using the AMIS mobile leg positioner which allows for the flexion, extension, abduction, adduction and rotation of the hip, both as a single movement and as a combined one. Such an apparatus allows to reduce the number of assistants and to reproduce subsequent surgical operations. As a dedicated tool we used various hip replacement models. We have been using this access route for about three years now. We have reaped the following advantages: no sectioning of muscular tissues, considerable reduction of rehab times, a smaller scar, reduction of post-operational pain, reduced blood loss, a shorter hospital stay, no dislocation, precocious resumption of daily activities. The percentage of patients operated upon by using this technique went from 25% in 2007 to beyond 50% in 2008 owing to the high rate of success and to acquired experience. We will analyse access problems, learning curve and the results we obtained.

**Poster**

**Session: Minimally Invasive Surgery - Humerus**

**Abstract number: 20944**

**A SIMPLE METHOD FOR HUMERAL FRACTURE NAILING**

Hassan EL-HUSSEINY

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A simple method for humeral nailing. We devised an interlocking nail for fractures of the humerus which has distal serrated end to engage in the distal fragment and the proximal end has 2 holes for fixation with one or 2 screws. No drill is needed. Just manual reaming of the proximal fragment and the proximal end of the distal fragment is done. We operated on 40 patients, their average age was 41 years, 27 were males and 13 were females. Seven fractures were segmental. All cases were treated by closed nailing. The average follow up period was 5.5 months. All fractures united within an average period of 3.6 months. Infection was encountered at the entry point of the nail in one case, and mild stiffness of the shoulder was present in 4 cases

**Poster**

**Session: Minimally Invasive Surgery - Humerus**

**Abstract number: 22338**

**MINIMALLY INVASIVE PLATE OSTEOSYNTHESIS (MIPO) BY ANTERIOR APPROACH - THE BEST OPTION IN DISTAL HUMERAL SHAFT FRACTURES**

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**AIM:** The purpose of this study is to exhibit the advantages of MIPO by anterior approach in distal humeral shaft fractures. **MATERIAL AND METHODS:** 8 fractures in 8 patients were operated by indirect reduction and biological plating, avoiding the problems related to the neural/vascular structures of the arm and especially to the radial nerve. According to AO classification, there were 1 fracture type 12A, 3 type 12B and 4 type 12C. The proximal approach was realized between the biceps and deltoid muscle. The distal approach was performed by subperiosteal dissection of the lateral supracondylar ridge of the humerus, with retraction of brachioradialis and long carpal extensor muscle, as well as the radial nerve. A classic or DCP plate of 4,5 mm with 10-12 holes was molded and twisted medially to adapt to the anterior face of the humeral lateral column and diaphysis. The plate was inserted from distal to proximal and fixed onto the shaft with at least 2 proximal and 2 distal screws, after reestablishing the humeral axis, length and rotation. For a fracture with radial nerve injury we first perform the nerve insulation and inspection. **RESULTS:** There were no vascular or nerve complications except a transient paresthesia for the radial nerve. All fractures healed within a mean time of 10 weeks after surgery, with good functional results regarding elbow mobility. **CONCLUSIONS:** The authors are promoting the advantages of this technique regarding safety and feasibility. MIPO seems to be the best option for distal third humeral fractures.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 21395**

**ARTHROSCOPIC INDENTATION TEST TO ASSES ARTICULAR CARTILAGE STIFFNESS**

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One of the first sign of the tissue degeneration is the changing of the biomechanical properties of the articular cartilage. Usually softening tissue precedes the fibrillation and accordingly a visible alteration of the cartilage surface. At the initial stages of degeneration, the visual evaluation is not able to estimate the structural and, obviously, the mechanical properties of articular cartilage. In order to obtain reproducible data, some arthroscopic instruments have been developed and used to asses articular cartilage stiffness and to measure the health status of cartilage in vivo. The Artscan 200 is an indentation instrument designed for the arthroscopic measurement of cartilage stiffness. The surgeon performs the test by pressing the distal end of the instrument instantaneously against the cartilage surface. The force of the tissue against the deformation induced by the indenter is an index of cartilage stiffness. We prove our consideration regarding the usefulness and the weakness of this arthroscopic indentation tester based on a review of the literature and our experience in clinical and preclinical studies. The arthroscopic indentation test could be useful for quantitative evaluation of cartilage stiffness, in order to asses mechanical properties of normal, degenerated and regenerated cartilage in clinical and preclinical studies, but the procedure needs further improvement especially for clinical application.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 21478**

**DEVELOPMENTS IN ARTHROSCOPIC ACL SURGERY**

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About 250 acl reconstructions WITHOUT tourniquetmodalities, advantages and results will be exposed(less thrombophlebitis, good rehabilitation, shorter delay to return activities and sports); - about study of instabilityanterolateral, postero lateral, antero medial and postero medial: wich kind? and wich way for stabilization?; - graft and reconstructiontype of the graft, one or two bundles, lateral return?; - about fixationsabout 250 reconstructions with screw (hydroxyapatitis and polyglycols BIOSTEON) study of tunnel enlargments and compatibility; - results and future in ACL rconstructions.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 21494**

**ARTHROSCOPY OF THE KNEE JOINT IN YOUNG PATIENTS**

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The purpose of this report is to describe knee joint pathology distribution in children and adolescents. On the basis of children's traumatological-orthopaedic department of 6th city clinical hospital of Minsk we performed 122 arthroscopies at 116 patients. Middle age of patients was 14,5 years (range 2-18 years). 76 from 116 patients marked a trauma of knee joint in the anamnesis. The basic types of a pathology demanding operative arthroscopic intervention on a knee joint were the followings: 1) recent and old damages of meniscuses, anterior crucial ligament and collateral ligaments (36,2%); 2) chondral and osteochondral fractures of the patella, condyles of femur and tibia (24,1%); 3) synovitis of various genesis (13,8%); 4) chondromalacia of various grades (7,8%); 5) Koenig disease (6,9%); 6) congenital anomalies of meniscuses (6%); 7) Leven-Larsen disease (2,6%), etc. 19 of 28 cases (67,9%) of chondral and osteochondral fractures of the knee joint's bones were observed at children till 15 years while 28 from 42 cases (66,7%) of damages of meniscuses or ligaments of a knee joint were observed at adolescents of 16-18 years. It is necessary to note the high diagnostic importance of arthroscopy. At 36 patients (31%) the diagnosis established by arthroscopy, completely has not matched with preoperative diagnosis. In 14 cases (12,1%) diagnoses have not coincided partially. The most difficult in diagnostics were chondral and osteochondral fractures: the incorrect diagnosis has been preliminary established to 18 patients with the given pathology.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 21646**

**ALLEGRETTO TM UNICOMPARTMENTAL KNEE ARTHROPLASTY: FUNCTIONAL RECOVERY AND RADIOGRAPHIC RESULTS WITH A MINIMALLY INVASIVE TECHNIQUE**

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**AIM OF THE STUDY:** We aimed to determine (1) early functional outcome and (2) radiographic limb alignment and component placement in AllegrettoTM (Zimmer-Warsaw) unicompartmental knee replacement. **MATERIALS AND METHODS:** We retrospectively evaluated 100 consecutive unicompartmental knee arthroplasties, performed in minimally invasive quadriceps sparing fashion, for medial compartment osteoarthritis in patients aged 51 to 82 years, with anteromedial tibial wear, less than 10 degrees of flexion contracture, correctable varus not exceeding 15 degrees, and an intact anterior cruciate ligament. **RESULTS:** Mean incision length was 8.3 cm, hospital stay 5 days, and blood loss 240 ml. Flexion at 3 months was between 120 degrees and 145 degrees (mean, 132 degrees). Among the patients, 80% could flex beyond 125 degrees, and 87% could sit cross-legged, kneel, and get up easily from the floor. The mean hip-knee-ankle axis was 177 degrees. Ninety-three percent of femoral components were centred on the tibial component. Tibial component slope was restored in 91%. **CONCLUSION:** Unicompartmental knee arthroplasties allows early functional recovery. Limb alignment and component placement is reliable even with a minimally invasive approach.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 21650**

**TRUFIT™ SYSTEM FOR OSTEOCHONDRAL LESION OF THE KNEE**

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The TRUFIT system™ (Smith&Nephew) is a bone graft substitute made of sour poly glycolide (50%), calcium sulfate (40%) and PGA fibers (10%). Aim of the study was to evaluate its clinical effectiveness. MATERIALS AND METHODS: Twelve patients were treated for osteochondral lesion of the femoral condyle of the knee. Six cases were women, the average age was 46 years, seven cases were left side. Indication for surgery was osteochondritis dissecans of the lateral femoral condyle in 6 cases, post traumatic chondral lesion (4° Outerbridge) of the medial femoral condyle in 6 cases. Chondral lesions were from 10 to 12 mm<sup>2</sup>. Nine cases were implanted an 11 mm scaffold and, in 3 cases a 9 mm. RESULTS: The average time for surgery was 45 minutes. Continuous passive motion of the knee was started the first post operative day, full weight bearing was allowed 6 weeks after surgery. At seven, 5, 3, and 2 months respectively of follow up the knees joint were pain free, full range of motion, and all patients were back to their ordinary lifestyle. CONCLUSION: The TRUFIT system™ showed to be a reliable treatment for osteochondral lesion smaller than 12 mm.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 21758**

**MINIMAL CORRECTIVE SURGERY & IMMEDIATE FITMENT OF ORTHOSIS IN SURGICAL CAMPS (A NEW COST-EFFECTIVE APPROACH IN PRESENT INDIAN SCENARIO)**

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India being a developing country about 90% populations living in villages, remote & backward areas and the same is true for disabled persons also. To provide free or highly subsidized rehabilitation services to this un-reached and underprivileged population, camp approach is an accepted method. In surgical camps, deformity correction and immobilization by plaster cast is routine method followed by a follow-up after about six weeks for removal of sutures/plaster & provision of orthosis. Since last 4 years we have done twenty surgical camps for deformity correction at different places countrywide & used a new technique developed in our institute i.e. -minimal corrective surgery and immediate fitment of orthosis- by use of pre-fabricated orthosis. Total 668 cases were benefited by surgery through those camps, out of which we used this technique in 326 cases of lower limb deformity (majority were of knee deformity). Follow-up was done for each camp after about 4-6 weeks of surgery for removal of sutures and readjustment of already fitted orthosis. The use of pre-fabricated orthosis, immediately after surgery had three main advantages i.e. firstly it reduces the cost markedly as excluding the cost of plaster secondly it ensures the provision of orthosis and lastly it corrects the residual deformity by gradual distraction with use of turn buckle attached in it. The result of this new technique is highly satisfactory, encouraging and found to be highly cost-effective.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 21936**

**MINIMALLY INVASIVE TOTAL KNEE ARTHROPLASTY: AN INITIAL EXPERIENCE AT THE UNIVERSITY OF SANTO TOMAS HOSPITAL, MANILA, PHILIPPINES**

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**BACKGROUND:** To our knowledge, there has been no published local data on minimally invasive total knee arthroplasty in the Philippines. Here we report our experience with the first twenty-three patients who underwent minimally invasive total knee arthroplasty at our institution. **METHODS:** Twenty-three patients who underwent 32 minimally invasive total knee arthroplasties at the University of Santo Tomas Hospital in Manila, Philippines were compared with a similar group of 12 patients who underwent 14 standard total knee arthroplasties. Incision length, blood loss, operative time, visual analog scale (VAS) scores, the ability to do a straight leg raising maneuver and post-operative complications were evaluated retrospectively. **RESULTS:** Patients who underwent MIS-TKA had, on the average, shorter length of incision, less blood loss, shorter hospital stay, and slightly improved VAS scores but did not achieve statistical significance. The minimally invasive approach also had longer mean operative time than the standard medial parapatellar approach but was not statistically significant (188 and 167 minutes respectively,  $p=0.3737$ ). Patients in the minimally invasive group also had shorter times to achieve straight leg raising and 90° knee flexion. Aside from one patient in the MIS-TKA group who had deep vein thrombosis, no other complications were found in this series. **CONCLUSION:** Our initial results show that MIS-TKA demonstrates a trend towards less perioperative morbidity and rapid functional recovery. Radiographic and long-term functional outcomes are needed to validate the potential advantages of minimally-invasive approach in total knee arthroplasty.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 21940**

**CHRONIC PATELLAR INSTABILITY IN YOUNG PATIENTS: CLASSICAL AND ARTHROSCOPIC METHODS OF TREATMENT**

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The purpose of our research were the estimation and comparison of efficiency of traditional (open) and arthroscopic techniques of surgical treatment of a chronic patellar instability (CPI) in young patients. The CPI is characterized by an imbalance of loading forces in the patellofemoral joint, recurrent dislocations and subluxations of the patella with or without connection with any traumatic influence. Since 1984 on the basis of children's traumatological-orthopedic department of 6th city clinical hospital of Minsk 25 operations in 24 patients with CPI were performed. 4 of them - arthroscopic release of lateral portion of knee joint extensors. Middle age of the operated patients was 13,6 years (range 5-25 years). Average term of hospitalization concerning traditional interventions was 22,4 days, concerning arthroscopic interventions - 14 days. The long-term postoperative results (from 1 month till 20 years) were available at 13 patients (9 from them underwent open operation, and 4 - arthroscopic). Results of open operations: 1 - excellent, 4 - good, 4 - satisfactory (knee pain most of the time, symptoms altered, further surgical treatment required in some instances). Results of arthroscopic operations: 4 - excellent. Thus, on the basis of ours experience of arthroscopic treatment of CPI and literature data, considering advantages of arthroscopic operations in comparison with open interventions, it is possible to conclude, that use of modern little-invasive techniques allows to raise efficiency of treatment and to lower risk of development of complications.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 22194**

**ARTHROSCOPIC SYNOVECTOMY FOR THE PIGMENTED VILLONODULAR SYNOVITIS OF THE KNEE**

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The purpose of this retrospective study is to analysis the minimum 2 year follow up results of arthroscopic synovectomy in the knee, which was affected by Pigmented villonodular synovitis. **METHODS:** The study included the 18 patients with an average follow-up of 38 months (range 24-36). All patients underwent arthroscopic extended or partial synovectomy depending on the extent of pathologic tissue. The whole area of knee joint could be approached using standard, posteromedial, posterolateral and transseptal portals. All patients were presented with the recurrent swelling without trauma or minimal trauma. Twelve knees were affected by a localized PVNS and the pathologic masses were excised. The remaining 6 patients affected by a diffuse form of PVNS, who were treated by the extended synovectomy. The pathologic diagnosis was confirmed by synovial biopsy. **RESULTS:** Among the patients affected by the diffuse form of PVNS, two knees needed the limited open approach to remove the extra synovial lesion. In the group affected by the localized form of PVNS, the arthroscopic excision resulted in a complete regression of the symptoms. No complications were seen such as infection, limitation of motion, or neurovascular injury. One patient needed the second synovectomy due to the recurrence of lesion in follow-up MRI. **CONCLUSIONS:** Arthroscopic synovectomy is the treatment of choice for localized forms of PVNS. In cases of diffuse PVNS, arthroscopic extended synovectomy could be done easily using transseptal portal, which decreased the needs for the open posterior approach.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 22260**

**CORRELATION BETWEEN MAGNETIC RESONANCE IMAGING, CLINICAL EXAMINATION AND ARTHROSCOPY OF THE KNEE JOINT**

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AIM: Historically for diagnosing soft tissue injuries of the knee we have relied on clinical examination but with the advent of the MRI scan many surgeons choose to confirm their diagnosis with its help. Our study aimed to ascertain the efficacy of clinical examination and the need for MRI scan for preoperative diagnosis. METHODOLOGY: This was a retrospective study; we identified patients who underwent arthroscopy of the knee joint. A total of 62 patients were identified all of which were operated upon by a single surgeon. In our study we had 38 males and 24 females and the average age was 52 years (Range from 22 to 83). RESULTS: Out of 62 patients, 55 had a definitive pre-operative clinical diagnosis and 7 patients had no clear cut diagnosis. The clinical and arthroscopic findings correlated in 44 patients (80%) out of total 55 patients. On comparing the MRI scan reports with the arthroscopic findings we found 48% patients had a complete correlation, 23% had partial correlation and 26% no correlation. CONCLUSION: In our study, we found only 50% of MRI scans were accurate, 25% were partially accurate and 25% were inaccurate. We recommend that if the clinical findings are convincing the patients should be listed for arthroscopy straight away. MRI scan should be indicated only in cases where history and clinical diagnosis are inconclusive especially in younger patients. This can avoid unnecessary delay in surgery and is cost effective.

**Poster**

**Session: Minimally Invasive Surgery - Knee**

**Abstract number: 22347**

**INTERMEDIATE TERM RESULTS OF MULTISTAGED SURGICAL MANAGEMENT OF KNEE DISLOCATION**

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**INTRODUCTION:** The multiple ligament injured knee, usually a result of knee dislocation, is a complex problem which requires a systematic approach for evaluation and treatment. Its management still remains variable and controversial. The purpose of this study was to evaluate the outcome of multi-staged protocol used in our hospital in the management of multi-ligament injured knee and their result. **MATERIALS AND METHODS:** Patients were included with injury to 2 or more of 4 major ligament of the knee who were treated from June 2003 to August 2007 and had completed the rehabilitation protocol of minimum one year were included in the study. The outcome was analyzed with Lysholm knee score and IKDC assessment. The data was analyzed by SPSS 13.0. **RESULTS:** 39 patients were included in the study. Mean follow-up duration was 622.13 + 160.16 days. 37 patients were male (94.8%) and two females (5.2%). The association between mechanism of injury and Lysholm/IKDC scale was not significant. The mean postoperative Lysholm score was 91.89 (SD 6.61). The mean score for acute group was 93.27 and that in chronic group was 78.2 whose difference was statistically significant. In final IKDC qualification, 2 knees (5.12%) were excellent (A), 33 knees (84.61%) were normal (B), 2 knees (5.12%) were fair (C) and 2 knees (5.12%) were poor (D). **CONCLUSIONS:** Multistaged surgical management of knee dislocation has good subjective and objective outcomes and nearly all patients, returned to their routine activities.

**Poster**

**Session: Minimally Invasive Surgery - Shoulder**

**Abstract number: 20765**

**FUNCTIONAL OUTCOME AND QUALITY OF LIFE AFTER ARTHROSCOPICALLY ASSISTED MINI OPEN ROTATOR CUFF REPAIR**

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We studied the functional outcome after arthroscopically assisted mini open rotator cuff repair using metal suture anchors in 36 patients (20-Males,16-Females, average age -39.7) with small and moderate size full thickness(1-3cm) tear of supraspinatus tendon with the UCLA, ASES patient self evaluation section forms and overall health status with SF36 questionnaire. Patients were followed up to a minimum of 2 years. The mean pre op UCLA score was 8.5, ASES shoulder index 27.7, at the end of 2 years the UCLA score was 22.2, the shoulder index was 95. All the eight SF36 domains and two summary scores showed significant improvement at the end of one year ( $p=0.0005$ ). As age increased, the ASES shoulder index and the role physical scores of SF36 values decreased. As duration of complaints increased, the values decreased but with no statistical significance. Two types of suture anchors were used (Arthrex 5 mm, HIP system 5 mm). No difference was found between the two groups but cost of the first group was significantly higher. No complications were seen. In this era of arthroscopic repair, the mini open repair still has excellent outcome and has high relevance in developing countries.

**Poster**

**Session: Minimally Invasive Surgery - Shoulder**

**Abstract number: 21024**

**ARTHROSCOPIC DEBRIDEMENT COMBINED WITH BICEPS TENOTOMY IN MASSIVE IRREPARABLE ROTATOR CUFF TEARS**

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AIM: To evaluate the result of arthroscopic debridement combined with Biceps tenotomy in massive irreparable rotator cuff tears. MATERIALS AND METHODS: 7 shoulders (5 right and 2 left) in 6 patients (2 women and 4 men) with massive, irreparable rotator cuff tears underwent arthroscopy by a single surgeon. The preoperative diagnosis was based on the clinical examination and MRI. Their mean age was 65.7 years (range 56-71 years), and the average follow-up was 19.8 months (range 4-39 months). If indicated, the performed arthroscopic debridement included acromioplasty, debridement of the cuff or tenotomy of the long head of the biceps. In 2 cases (28%) acromioplasties and in 4 cases (57%) biceps tenotomies were performed, 3 of which were single tenotomies without any associated acromioplasty. 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 82% of the patients were satisfied with the procedure. CONCLUSION: Our early results suggest that arthroscopic debridement combined with Biceps tenotomy is an excellent treatment for elderly patients with modest functional demands. 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 preoperative superior migration of the humeral head, presence of subscapularis tear, and presence of glenohumeral arthritis and decreased range of motion.

**Poster**

**Session: Minimally Invasive Surgery - Shoulder**

**Abstract number: 21500**

**PERCUTANEOUS METHOD FOR THE TREATMENT OF ACROMIOCLAVICULAR DISLOCATION**

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Acromioclavicular injuries are a common result of falls onto the point of the shoulder and comprise 3-5% of all shoulder girdle injuries. The method we present is a percutaneous variant of the Bosworth method in which, under fluoroscopic control a guide wire is placed, and a cannulated screw fixates the clavicle and the coracoid process. We compare this percutaneous method with classical open surgical methods of tension band wiring (zuggurtung) and Bosworths method with the reconstruction of ruptured coracoclavicular and acromioclavicular ligaments. The percutaneous method has been shown to reduce wound complications and scarring compared to open methods. It also carries a reduced risk of osteitis and wound infection which in open surgical methods is 6%.

**Poster**

**Session: Minimally Invasive Surgery - Shoulder**

**Abstract number: 22052**

**FAT PAD SIGN: SIGNIFICANCE IN ARTHROSCOPIC SUBACROMIAL DECOMPRESSION**

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Ellman was the first to report arthroscopic subacromial decompression in 1983. Since then it has flourished extensively and now it is an established alternate technique as compared to open surgery. We on average perform more than 250 shoulder arthroscopic procedures in our unit per year. We report significance of presence of fat pad in the subacromial space and its relationship to the. Subacromial impingement as a cause of shoulder pain. We have consistently found in more than 1000. Arthroscopic decompression procedures that in the presence of thick fat pad, acromian is not the cause of impingement and subacromial decompression alone in these cases have not significantly improved the preoperative symptoms. In these cases the cause of impingement was either internal impingement or ACJ impinging on the rotator cuff. We present our series with pre and post operative evaluation of the patients and arthroscopic photographs.

**Poster**

**Session: Minimally Invasive Surgery - Shoulder**

**Abstract number: 22062**

**ACJ PORTAL PLACEMENT REVISITED**

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The acromioclavicular joint pathology is a significant source of shoulder pain. It can be either a degenerative disease of the ACJ on its own causing impingement and cuff deterioration or a hypermic bone resorption giving rise to shoulder symptoms. However most of the times it is linked to the subacromial pathology. There are two ways of dealing with ACJ pathology, either to approach the joint while doing subacromial decompression or direct approach via anterosuperior or posterosuperior portals. Exact localisation of the ACJ without hassle remains the first essential step to approach ACJ. It is sometimes difficult to localise the joint even after multiple needle insertions. We have developed a surface marking technique to exactly localise the ACJ. We have managed to enter the joint on first attempt on more than 95% occasions. This paper describes the technique with photographs and arthroscopic pictures.

**Poster**

**Session: Minimally Invasive Surgery - Shoulder**

**Abstract number: 22394**

**ARTHROSCOPIC SUBACROMIAL DECOMPRESSION FOR TIPE II AND TIPE III IMPINGEMENT SYNDROM**

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A number of 26 consecutive patients with type II and III impingement syndrome (10 with no tear of the cuff- group A, 9 with a partial thickness tear- group B and 7 with full thickness tear- group C), were treated using arthroscopic subacromial decompression. The follow-up were at minimum 2 years. Patients were pre- and postoperatively using UCLA scale and Neers criteria. Apical oblique and outlet Rx views of the shoulder were used to evaluate adequate removal of bone. Range of motion improved postoperatively for all patients. For all patients, preoperative UCLA and Neer ratings were unsatisfactory. In group A, postoperative UCLA and Neer ratings improved in 87%, in group B were 84% good results, and in group C 78% satisfactory results. Arthroscopic subacromial decompression and rotator cuff debridement is a good method of treatment of tipe II impingement, including patial thikness tear, as well as in tipe III painfull impingement. Radiographic evaluation provides excellent documentation of preoperative subacromial bone pathology and postoperative bone removal.

**Poster**

**Session: Minimally Invasive Surgery - Spine**

**Abstract number: 20006**

**COMPUTER AIDED PERCUTANEOUS VERTEBROPLASTY AND KYPHOPLASTY USING EFILM WORKSTATION SOFTWARE**

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**OBJECTIVE:** To evaluate the feasibility and efficacy of using Efilm software in percutaneous vertebroplasty and kyphoplasty. **METHODS:** The study group included 20 patients. Preoperative CT or MRI was required. The DICOM files were imported into Efilm software. Before operation an ideal needle trajectory was drawn in the interface of the software, and the skin entry point, depth and angle of the needle could be determined. The positions of the virtual needle tips were recorded. During the operations, the skin entry points could be located with vernier caliper, and the needles were placed according to the predetermined parameters with Accuangle. The positions of the real needle tips were calculated with Efilm software through fluoroscopy, which were compared with the corresponding data of preoperation, the difference was calculated. The accuracy was graded as follows: <5 mm, excellent; 5 mm to 10 mm, good; >10mm, poor. **RESULT:** The difference between the intraoperative distance between the needle tip and the midline of the vertebral body and that of preoperation was  $3\pm 1$ mm (range, 0 to 6 mm). The difference between the intraoperative distance between the needle tip and the anterior wall of the vertebral body and that of preoperation was  $4\pm 1$ mm (range, 0 to 8 mm). 15 patients were rated as excellent, 5 patients were rated as good. **CONCLUSION:** Efilm workstation software can provide us with accurate parameters such as ideal entry point, depth and angle of needles preoperatively, under the guide of which the needle can be placed as it was planned.

**Poster**

**Session: Minimally Invasive Surgery - Spine**

**Abstract number: 20816**

**SELECTIVE NERVE ROOT INJECTIONS IN LUMBAR RADICULOPATHY: A PROSPECTIVE CLINICAL OUTCOME STUDY AS A MINIMALLY INVASIVE ALTERNATIVE TO SURGERY – A FIVE YEAR FOLLOWUP**

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AIM: To establish selective nerve root injections in lumbar radiculopathy as an effective, minimally invasive alternative in patients either unwilling or unfit for surgery. A five year prospective clinical outcome study conducted on patients with lumbar radicular pain with disc herniation, secondary foraminal stenosis confirmed by an MRI and patients with failed previous surgery demonstrating persistent symptoms. All these patients had failed atleast 6 weeks of conservative management and were ideal candidates for surgery but had either refused or were unfit. In all 150 patients were injected with Bupivacaine and Betamethasone, 220 nerve roots were injected and 300 injections were given with a minimum followup of 5 years. We used 1 ml of betamethasone (4mg/ml) with 1 ml of 0.25% bupivacaine. All injections were performed fluoroscopically and needle placement confirmed by injecting omnipaque-240. In our study, 80% operative candidates were able to avoid surgery. Results were better in pts with symptom duration less than 3 months. This can be explained by development of irreversible neurophysiologic changes due to chronic inflammation. Patients who had concomitant secondary foraminal stenosis responded less favourably compared to pts who had just prolapse disc as cause of their symptoms. It can be concluded that selective, fluoroscopically guided lumbar nerve root injections are current, state of the art form of local anaesthetic and steroid delivery to exact trigger site of pain with minimal complication. They may be diagnostic as well as therapeutic and may obviate need for a lumbar surgery.

**Poster**

**Session: Minimally Invasive Surgery - Spine**

**Abstract number: 21027**

**LUMBAR DISCECTOMY BY INTERLAMINAR FENESTRATION TECHNIQUE**

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More than 90% of patients improve with conservative treatment - rest, analgesics, epidural steroids, facet joint injection, physiotherapy. Only 2-4% of patients require surgical intervention. The absolute indications for surgery include Cauda equina syndrome and progressively increasing neurological deficit. Various techniques of lumbar discectomy includes Laminectomy / Laminotomy, Interlaminar Fenestration, Microdiscectomy, Endoscopic discectomy, Laser discectomy etc. Fenestration technique was used as spinal stability is preserved, perineural fibrosis is less, soft tissue dissection is minimal, hospital stay is reduced, rehabilitation is fast and post-operative back pain is minimal. Aim of our study was to study the short-term results of lumbar discectomy by interlaminar fenestration technique, in the terms of postoperative relief in the pain, neurological improvement and functional status. Total number of patients was 25. Interlaminar fenestration includes removal of ligamentum flavum, inferior margin of the superior lamina, superior margin of inferior lamina and discectomy. In Interlaminar fenestration technique, supraspinal and interspinal ligaments, spinous processes, lamina and facet joints are preserved. Minimal exposure is required in this technique. Post operatively, patients were mobilized as soon as surgical pain subsided. Turning on bed - 1st day, standing & Walking - 3rd day, sitting - 5th day, spinal extension exercises - 7-10th day. Patients were followed up at the interval of 1 month till 3 months, then every 3 months and were assessed for: 1. Severity of pain by Rolland Morris pain scale (1983). 2. Functional and economical status by Anatomic Economic Functional Rating Systems (1985). 3. Progression of neurological recovery during follow-up.

**Poster**

**Session: Minimally Invasive Surgery - Spine**

**Abstract number: 21701**

**STRESS FRACTURE OF BILATERAL POSTERIOR FACET**

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A case report of stress fracture of bilateral lumbar posterior facet after implantation of interspinous process device is reported and the literature reviewed. To report the rare case of stress fracture of bilateral lumbar posterior facet after implantation of interspinous process device. SUMMARY OF BACKGROUND DATA: A 64-year old woman presented with severe back pain and radiating pain in both legs. In her history, she had undergone implantation of L4-5 interspinous process device (Coflex™, Paradigm Spine, Wurmlingen, Germany) for her neurogenic claudication at 6 year ago. Magnetic resonance image demonstrated signal change suggesting bilateral L4 inferior process. To the best of the authors' knowledge, there has been no report stress fracture of posterior facet after implantation of interspinous process device. This study reviewed the patients' medical record, her imaging studies and related literatures. In the reported case, stress fracture of bilateral posterior facet was documented with MRI and confirmed with surgical treatment for the surgical treatment of spinal stenosis. The involved facet joint was at the site affected by previously implanted interspinous process device. Posterior facet fracture can occur as a complication of interspinous process device.

**Poster**

**Session: Minimally Invasive Surgery - Spine**

**Abstract number: 21735**

**CANAL REMODELING AND NEUROLOGICAL RECOVERY IN POSTERIOR INSTRUMENTATION OF THORACOLUMBAR AND LUMBAR BURST FRACTURES**

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To determine whether posterior instrumentation of the spine in thoracolumbar and lumbar burst fractures produces better remodeling of the spinal canal leading to increased chances of neurological recovery in comparison to non-operative management. Eighty-six consecutive patients with thoracolumbar and lumbar burst fractures who fell into two groups were studied. Group I was treated non-operatively (n=41) and Group II underwent surgery (n=45). The degree of initial spinal canal compromise and subsequent remodeling were assessed from the computed tomography scans. The neurological status at the time of presentation & at final follow-up was assessed by the American Spinal Injury Associations modified Frankels grading. The mean (SD) spinal canal compromise in patients with and without neurological deficit in Group I was 45.85% (22.60) and 42.52% (17.97) respectively, where as it was 51.31% (16.41) and 51.68% (19.13) in Group II. In Group I overall mean (SD) spinal canal compromise at the time of admission and at final follow-up was 44.15% (20.17) and 18.78% (11.03) respectively, where as it was 51.47% (17.40) and 14.84% (14.60) in Group II. The mean (SD) canal remodeling was 58.27% (14.13) in the non-operative group and it was 72.21% (19.80) in operative group, found to be statistically significant (p: <0.001). Operated patients have significantly better canal remodeling than patients treated non-operatively. However there is no significant difference between the two groups in terms of neurological recovery.

**Poster**

**Session: Minimally Invasive Surgery - Spine**

**Abstract number: 21927**

**LASER ASSISTED SPINAL ENDOSCOPY (LASE) FOR THE TREATMENT OF CENTRAL LUMBAR DISC HERNIATION WITH NEUROGENIC CLAUDICATION**

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**OBJECTIVE:** To evaluate the clinical efficacy of percutaneous lumbar disc decompression with laser assisted spinal endoscopy (PLDD with LASE) in central lumbar spinal stenosis. **MATERIALS AND METHODS:** Three patients presented with central lumbar spinal stenosis and neurogenic claudication underwent PLDD with LASE. All the patients had central contained disc herniation, which resulted in central spinal stenosis. Under local anesthesia, 3mm working cannula was introduced into the disc, and the tip was positioned in central subannular herniation. Under endoscopic view, subannular herniated disc was removed with straight firing Ho: YAG laser. Clinical and radiological data was reviewed postoperatively with the minimum follow-up of 6 months. Patient satisfaction was evaluated by the Macnabs criteria of latest follow-up. **RESULTS:** The mean amount of delivered laser energy was 23033J. All the patients showed excellent outcome at their latest follow-up. **CONCLUSION:** PLDD with LASE is a effective method for decompression of lumbar spinal stenosis caused by central contained disc herniation.

**Poster**

**Session: Minimally Invasive Surgery - Spine**

**Abstract number: 22211**

**OUTCOME OF SINGLE LEVEL POSTERIOR LUMBAR INTERBODY FUSION FOR DEGENERATIVE SPONDYLOLISTHESIS**

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**INTRODUCTION:** To study the clinical and radiologic records of patients who underwent single-level posterior lumbar interbody fusion (PLIF) with pedicle screws and cages in degenerative spondylolisthesis patients. **METHODS:** The study included 20 patients who had been followed for 2 years after posterior lumbar interbody fusion with pedicle screw and cages for the treatment of L3-L4 or L4 -L5 degenerative spondylolesthesis. The average follow up was 18-24 month. A standard questionnaire was made to asses all patients functional status neurological status (MRC criteria) visual analogue score (VAS), Japanese Orthopaedic Association score (JOAS), Oswestry disability score was recorded pre-operatively and post operatively which were compared and evaluated. **RESULTS:** The age at the time of surgery is 40-60 with average age of 50.5 year Post operative complication like wound dehiscence with superficial infection occurred in 1 patients for which wound wash was done, one patient had neurological deficit of grade 3/5 and one patient had dural tear. All patients the mean JOA score increased from 10 to 23.8 and Oswestry score decreased from mean of 38 to 14.4 at the final follow up. All patients recovered from leg pain. The functional activity improved about 80% in all patients at last follow up. **CONCLUSION:** Our results suggest that an instrumented posterior lumbar interbody fusion performed with either one or two cages in addition to a bone graft around the cage has a low rate of complications and a high fusion rate.

**Poster**

**Session: Minimally Invasive Surgery - Systemic**

**Abstract number: 22030**

**SHORTCOMINGS OF THE PAYMENT BY RESULT SYSTEM: FOR ARTHROSCOPIC PROCEDURES**

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INTRODUCTION: Since its introduction in 2005, the UK Governments intention is to re-imburse 90% of the NHS activity by the Payment by Result (PBR) scheme. The HRG codes are worked out from the operative procedure codes (OPSC 4.4) and the ICD-10 codes for co-morbidities. METHODS AND MATERIAL: A retrospective evaluation of the coding for 175 patients who underwent arthroscopic surgery between April and August 2007 at the Q.E.Hospital. Co-morbidities of patient were documented. Data collected was cross referenced against coding claims provided by the coding department to check the appropriate application of different codes. RESULTS: Majority of the patients underwent knee arthroscopy (133), the other main group being that of shoulder (28). Supplementary procedures such as microfractures were not accounted for in 46 of the 175 arthroscopies. 2 patients who underwent an arthroscopic irrigation for septic arthritis failed to have the 70% surcharge claimed. 2 patients who underwent an arthroscopic ACL reconstruction were coded as simple arthroscopies. Co-morbidities were not accounted for in 34 patients. DISCUSSION: Deficiencies were elicited at various levels, right from improper documentation of the sub-procedures performed in the operation title by the surgeon, to inappropriate accounting for co-morbidities and HRG codes by the Coding department. As appropriate coding decides the remuneration claimed by the Trust, discrepancies at any level lead to loss of revenue by the Trust. The present OPSC coding system (4.4) does not seem to keep pace with the ever evolving newer procedures performed arthroscopically.

**Poster**

**Session: Minimally Invasive Surgery - Systemic**

**Abstract number: 22587**

**ACETABULUM AND PELVIC RECONSTRUCTIONS WITH MASSIVE ALLOGRAFTS**

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Since 1982 we have used the Bone Bank in Marseille for reconstruction of the acetabulum. ETIOLOGIES: Tumoral Etiologies: Infectious Etiologies. Hip Reconstruction after Revision Surgery. ALLOGRAFTS: The graft is taken under very strict aseptic conditions in operating theatre and is deep frozen and conserved in liquid nitrogen at 196°C with antibiotics. SURGICAL TECHNIQUES: Reconstruction of the Pelvis. Reconstruction of the hemi pelvis. Refixation of the muscles on the bone. The femoral prosthesis is cemented in the desired position. Total Weight bearing is possible by 15-21 days postoperatively. For Isolated Reconstructions of the Acétabulum: The approach used in revision surgery of the hip is a lateral external transgluteal route. The femoral allograft(s) is (are) remodelled to reconstruct the acetabulum perfectly after screwing them directly into the spongy bone. CLINICAL APPLICATIONS AND RESULTS: The Chondrosarcomas were always resected on a large scale. There are very few relapses within the 10 to 15 years after operation but we see some after this period of time. The others sarcomas all resulted in the death of patients after a longer or shorter interval. Septic Loosening of prosthesis appear to us to be a good indication for surgery in two stages. A fracture of allograft may heal completely. The allograft-host union has to be fastened by stable osteosynthesis and surrounded by spongy autograft. The number of septic complications is comparable in our series to that of series using massive metal prosthesis. A number of serous effusions led us to review the immunology of bone allografts.

**Poster**

**Session: Minimally Invasive Surgery - Tibia/Fibula**

**Abstract number: 21175**

**MINIMALLY INVASIVE PLATE OSTEOSYNTHESIS IN TIBIA FRACTURES**

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**PURPOSE:** Evaluation of MIPPO efficacy in tibia fractures. **MATERIAL:** 40 patients with tibia fractures treated using MIPPO technique from 2003 to 2008. Mean age:  $41.6 \pm 13.2$  years (18-74). Proximal tibia fractures were seen in 6 cases, distal in 6 and shaft fractures in remaining 28 patients. Open fractures: in 10 cases. The mean interval from trauma to definitive MIPPO comprised  $17.8 \pm 24.3$  days (0-99). The reasons for delay were concomitant injuries in 14 patients or severe grade III open fractures, treated initially with external fixation until skin closure (3). In all but 3 cases LC-DCP were used. Lateral plate position was used in 12 cases due to skin condition or fracture configuration (lateral plateau fracture). Medial position was preferred because of easier plate contouring and lesser damage to bone vascularity. Fibula osteosynthesis was performed in 9 of 17 patients with lower third fractures. Manual reduction used in 36 cases, instrumental in 4. **RESULTS:** Most fractures (36/40) healed without significant complications with callus formation, mean time to full weight-bearing comprised  $18.1 \pm 5.1$  weeks. There were 3 cases of delayed union after open III tibia fractures that required bone grafting. One patient died from thromboembolism 8 weeks after surgery. In 2 cases superficial infection occurred. Axial deviations more than 5 degrees occurred in 2 patients (clinically not significant). **CONCLUSIONS:** MIPPO is reliable modality of tibia fracture treatment indicated in complex periarticular fractures or in cases where IM-nailing is not safe (severe open fractures) or not available.

**Poster**

**Session: Minimally Invasive Surgery - Tibia/Fibula**

**Abstract number: 21840**

**ROLE OF CALCIUM HYDROXYAPATITE IN DEPRESSED TIBIAL PLATEAU FRACTURE**

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Intraarticular fractures of upper end tibia have been considered thorny management problems primarily because of languishing long term complications associated with these types of injury, demeaning the functional outcome. The residual disabilities are attributed not only to the severity of injury but also to the complications and side effects of treatment method used. Management of displaced tibial plateau fractures by plaster cast immobilization often lead to fracture displacement. On the other hand, traditional form of open reduction and internal fixation with bone grafting has a high incidence of soft tissue problems. Minimally invasive techniques with use of calcium Hydroxyapatite fall in between these two methods of management. AIM: This study was undertaken to see the effectiveness of Calcium Hydroxyapatite as a filler substance in depressed tibial plateau fractures. MATERIAL AND METHODS: In this prospective study, 27 patients with depressed tibial plateau fracture were treated with minimal invasive surgery and calcium Hydroxyapatite bone substitute. RESULTS: At 12 month follow up mean range of knee motion was 127 degree. Incidence of ligamentous injuries in our series was 21%. The average time to union was 16.7 weeks. As per Rasmussens functional criteria 38% had excellent, 50% good, 8% fair and 4% poor result. CONCLUSION: Use of Calcium Hydroxyapatite as a bone substitute along with minimal invasive surgery can be recommended for the treatment of depressed tibial plateau fractures as it gives 88% good to excellent results with minimal complications. It avoids all the donor site morbidity associated with bone grafting.

**Poster**

**Session: Paediatrics - Ankle/Foot**

**Abstract number: 19950**

**COMPARATIVE ANALYSIS OF PODOGRAPHY AND RADIOGRAPHY IN THE MANAGEMENT OF IDIOPATHIC CLUBFOOT BY PONSSETI S TECHNIQUE**

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**PURPOSE:** To compare the foot bimalleolar angle method (podography) and radiography with respect to management of idiopathic clubfoot by Ponsetis Technique and its functional evaluation. **MATERIALS AND METHODS:** 60 feet of 48 patients with idiopathic clubfoot deformity were assessed in terms of foot bimalleolar angle (FBM) by podography and radiologically before starting treatment, after 6 weeks and at 6 monthly intervals with a maximum follow up period of 4.8 years (Range 1.2 to 4.8 years). Mean age at start of treatment: 1.5 years (2 months to 2.5 years). Functional evaluation was done by Magones scoring system. **RESULTS:** After treatment 90 percent patients had good correction (FBM greater than 70 degrees) which correlated well with post treatment Magones score of greater than 80 (good to excellent) in nearly 85 percent of cases. Radiologically, Talocalcaneal angles in both the views improved in only 60 percent of cases. **CONCLUSIONS:** 1. Radiological criteria show inconsistent correlation with functional outcome for feet treated by Ponsetis Technique. 2. Podography is a simple, objective, cost effective, radiation free, easily reproducible clinical criterion for the assessment of deformity correction by Ponsetis Technique with an excellent correlation with functional outcome.

**Poster**

**Session: Paediatrics - Ankle/Foot**

**Abstract number: 20768**

**TREATMENT OF CTEV BY THE PONSETTI METHOD USING THE PIRANI METHOD FOR EVALUATING THE DEFORMITIES**

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**INTRODUCTION:** The evaluation systems for the deformities in Congenital Talipes Equino Varus have always had high inter observer variability, too much dependance on radiography, difficult to consistently monitor the progress and time consuming. So we have used the Pirani Method of Scoring to evaluate the deformities and monitor the progress of treatment by the Ponsetti Method. **MATERIALS & METHODS:** 76 children with 93 club feet were studied from May 2005 to December 2008 and were treated by the Ponsetti Method and the results were tabulated as per the Pirani Scoring. The complications were also noted. **RESULTS:** 82% Excellent Results, 17% Average and 2% Poor were observed. **CONCLUSION:** The Pirani method of scoring is an ideal tool to evaluate the progress of treatment in CTEV and the Ponsetti method is an excellent method to correct the deformities.

**Poster**

**Session: Paediatrics - Ankle/Foot**

**Abstract number: 20791**

**TREATMENT OF CONGENITAL AND ACQUIRED FOOT DEFORMITIES WITH EXTERNAL FIXATIONS**

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The treatment of complex foot deformities often needs the use of special external fixators to treat the deformities of multiplaner direction and contractures of the ankle joints, equinovarus deformity. From 1993 to 2008 we treated 126 cases of severe foot deformities with congenital clubfoot, neuromuscular deformities and posttraumatic deformities age between 3 to 45 years with external fixators. In some cases the treatment was combined with lengthening and axial correction of the lower leg if needed. The average time for correction is 4 to 6 week's followings by 2-3 months of fixation to keep the final correction. A special orthosis is needed after removal of the fixation devices for another 6 months. Complications were mostly superficial Pin infection, loosening of wires, no nerve or vascular damage and no thrombosis was seen. In all cases a plantigrade foot was achieved with stiffness of the joints in neuromuscular diseases. The walking ability was in most cases much better due to the plantigrade position of the foot; enable the patient to walk without any aid accepts orthopedic shoes. The satisfaction rate of all patients was very good; some of the patients were able to walk first time due to the correction. The use of external fixation is an ideal treatment in complex congenital or posttraumatic foot deformities to achieve a good correction and good functional and cosmetic result.

**Poster**

**Session: Paediatrics - Ankle/Foot**

**Abstract number: 21393**

**THE ISCHAEMIC FOOT IN THE INFANT - THE ORTHOPAEDIC CHALLENGE**

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**INTRODUCTION:** Ischaemia of the foot in an infant is a cause for concern often resulting in amputation and medico legal problems. **AIM:** To present the clinical problems in infants with gangrene of the feet. **METHODS:** Four infants, aged 1-10 months were seen in 12 years. There were 2 infants with club feet. One developed spontaneous bacterial septicemia and metabolic derangements with gangrene of both feet during serial plaster treatment. The second developed gangrene of one foot on the third day following posteromedial release. This child had a severe viral infection with dehydration. The third child was referred with gangrene of both feet following medical treatment for meningococcal septicemia. The remaining child was also treated for gangrene of both feet following Staphylococcus aureus septicemia by general surgeons. He was referred 4 years later with stunted growth and multifocal osteomyelitis was diagnosed as the initial infection. **RESULTS:** Two children had midfoot amputations, the third a right below knee, the last a right below knee and left forefoot amputation. **DISCUSSION:** Infants undergoing orthopaedic treatment may develop ischaemic problems. This may be attributed to tight plasters or surgical error. Infections are often the initiating cause resulting in deranged metabolism and altered flow states. **CONCLUSION:** Orthopaedic surgeons should meticulously record details of plaster treatment and post operative care. The orthopaedic treatment may be incidental in the development of ischaemic complications. A thorough paediatric medical assessment is important before the cause of the gangrenous foot is attributed to orthopaedic error.

**Poster**

**Session: Paediatrics - Ankle/Foot**

**Abstract number: 21702**

**MANAGEMENT OF NEGLECTED CTEV (THE INDIAN SCENARIO)**

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**INTRODUCTION:** Club foot is a controversial topic. Various treatment options are there like gentle manipulation, strapping, splinting, serial POP Cast, soft tissue release, fractional Distraction, osteotomy/arthrodesis etc. When we talk about the neglected club foot the controversies increased too many fold. Developing countries like India is flooded with NEGLECTED CLUB FOOT may be because of various constraints. Hence treatment is either not initiated or incompletely performed and the burden of disability increases with time.

**MATERIALS & METHODS:** We have seen 653 case of CTEV since last four years from February 2005 to February 2009. Out of which 251 cases were of neglected one. Majority of the neglected CTEV were treated surgically in the Institute however few cases were tried to treat by Ponsetti plastering in periphery during camp.

**RESULT:** Result of our cases was assessed clinically based on the criteria led by Yadav et al. According to this if one can achieve a plantigrade foot which can bear weight on the skin of the sole and have ability to wear normal shoes is labeled as successful (good) result. In our series we have 85% good, 10% fair and 5% poor result.

**CONCLUSION:** The treatment of the Neglected club foot must be done with full awareness of the pathological anatomy of the condition. In very rigid, resistant foot it is always better to combined surgery with either JESS or Ilizarov method.

**Poster**

**Session: Paediatrics - Ankle/Foot**

**Abstract number: 22227**

**THE RESULTS OF LAMBRINUDI ARTHRODESIS FOR TREATMENT OF DEFORMITY OF THE FOOT**

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**MATERIALS AND METHODS:** 33 patients have undergone examination: Average duration of examination was 8.2 years (6-11 years). Average age 34.2 (14-60), including 7 patients (21%) of 16 years. In 36% of cases, the deformation developed on the basis of flaccid paralysis, in 22% because of myelodysplasia, 15% as a result of malunion of heel bone, 15% talipes, and 12% on the basis of infantile cerebral paralysis. 66.5% of patients had talipes equinovarus, 24.5% had talipes varus, and 9% talipes equinus. Equinus disposition of 72% of patients exceeded 45°. In the course of pre-operational examination, deforming arthrosis of ankle-joint or talocalcaneonavicular joint were detected by X-ray at 6 patients of 35 years and 13 patients above 35. All patients undergone correcting subastragalar arthrodesis of Lambrinudi. In 8 cases the operation was combined with lengthening of Achilles tendon. **RESULTS:** Full correction of foot shape was achieved for 25 patients (76%). 29 patients (88%) achieved significant improvement of gait, including 26 patients that use ordinary footwear. Nonunion in talocalcaneonavicular articulation was recorded in 7 cases (21%), in calcaneocuboid in 3 cases, in both joints 2 cases. 4 patients noted moderate pain syndrome. **CONCLUSIONS:** 1. In cases of equinus, varus and adduction deformation of foot, correcting subastragalar arthrodesis of Lambrinudi helps to achieve full correction of shape in 76% of cases and to improve the gait of 88% patients. 2. Correcting operations for deformation of foot must be carried out at the early stages in order to prevent deforming arthrosis.

**Poster**

**Session: Paediatrics - Ankle/Foot**

**Abstract number: 22296**

**APPLICATION OF PONSETI PRINCIPLE FOR CORRECTION OF NEGLECTED AND RELAPSED CLUB FOOT WHILE CORRECTING WITH ILIZAROV FIXATOR**

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**INTRODUCTION:** Conservative management of club foot by serial casting using Ponseti principle is well accepted world wide below 2 years of age. This is for the first time we have applied Ponseti principle for correction of neglected and relapsed clubfoot while treating with Ilizarov fixator. **MATERIALS AND METHODS:** In a prospective study, 15 cases of neglected and relapsed clubfeet were treated by Ilizarov distraction method using Ponseti principle in 12 children with mean age of 8.6 years (4-16years). The frame assembly differs from the conventional Ilizarov technique by having a midfoot frame that transfixes the talar head in the 1st stage of surgery. All the deformities were corrected simultaneously according to the Ponseti principle except the hindfoot equinus which was addressed last by putting a hind foot frame in the 2nd stage of surgery with added percutaneous tenotomy. Clinical and functional outcome was evaluated by Dimeglios scoring system and oral questionnaire method respectively at the end of 2 year. **RESULTS:** The correction of deformity by this technique was significant ( $P < 0.001$ ) with mean reduction in Dimeglios score of 11.7. The average time taken for correction was 4.2 weeks. All feet were plantigrade, functional and painless. The parents were satisfied with the outcome. **CONCLUSION:** Correction of neglected and relapsed club foot by Ilizarov distraction technique using Ponseti principle leads to early correction with minimal number of residual deformities and complications. **KEYWORDS:** Ilizarov fixator in relapsed club foot, Ponseti principle, Neglected clubfoot, Relapsed club foot

**Poster**

**Session: Paediatrics - Ankle/Foot**

**Abstract number: 22414**

**NEUROMUSCULAR EDUCATION AS AN INTEGRAL COMPONENT OF CLUBFOOT THERAPY IN PATIENTS UNDERGOING DIFFERENTIAL DISTRACTION**

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The physical and psychosocial demands on the child with clubfoot have exceeded the bar that was set by Ponsetti and others years ago. A plantigrade, pain-free foot that fits into a shoe is no longer compatible with the expectations that patients and their parents have today. Additionally, regardless of whether the treatment is surgical or conservative, the average orthopedic surgeon is faced with a high recurrence rate of near 27-50%. Differential distraction offers predictable and reproducible correction of all components of clubfoot without need for open surgery. However, high recurrence rates are still reported due to muscular imbalances. A complete global neuromuscular screening was performed on all patients in our series, which has identified a tendency towards functional delay in the clubfoot child with regards to asymmetry, integration of righting and protective extension, advanced coordination and gross motor activities. Therefore, we propose a holistic approach to clubfoot treatment by combining functional therapy followed by differential distraction, integrated with Cuevas Medek Exercises (CME) neuromuscular therapy. This achieves the maximum potential for restoration of typical function in the child and reduces the high rate of recurrence demonstrated with other approaches. Ten patients (7 male, 3 female) between the ages of 2-10 years were included in the study. Early results show enhanced global functioning and adaptability in all types of clubfoot at all levels along the protocol.

**Poster**

**Session: Paediatrics - Ankle/Foot**

**Abstract number: 22428**

**UNILATERAL FOOT ABDUCTION ORTHOSIS IS EFFECTIVE IN IDIOPATHIC CLUB FOOT**

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Use of traditional foot abduction orthosis (FAO) is an essential part of treatment by the Ponseti method of idiopathic club foot. Lack of compliance with the orthosis is considered to be one of the primary causes of recurrence. There is little data published regarding the outcome after the use of alternative splints. In our experience many families experience difficulty in complying with the strict regime recommended by Dr. Ponseti. We felt that it would therefore be reasonable to introduce and evaluate an alternative device that would maintain the foot in a position of 70° and 10° of dorsiflexion. We reviewed the outcome of these patients with regard to recurrence, patient compliance and parent satisfaction. Our study included 27 children (35 idiopathic clubfeet). Mean follow up was 25 months (16 - 36 months). Recurrence was observed in 11 feet (31.4%). 6/11 (17.1%) of these recurrences responded favourably to a further period of serial casting with or without repeat tendo-achilles tenotomy, following which we returned to the FAO regimen for as long as the parents would comply. 3/11(8.5%) patients responded favourably to a tibialis anterior transfer and 2/11(5.7%) failed to respond to further non operative treatment and eventually required a traditional postero medial release. Following the use of unilateral Knee Ankle Foot Abduction Orthosis (KAFAO) our results indicate short term success of the Ponseti method and the device can be considered if compliance with the traditional FAO is a real concern.

**Poster**

**Session: Paediatrics - Elbow**

**Abstract number: 19324**

**OUTCOME OF OPEN REDUCTION AND INTERNAL FIXATION OF NEGLECTED LATERALCONDYLE FRACTURE IN CHILDREN**

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INTRODUCTION: Lateral condylar fractures are second in number amongst distal humerus phseal fractures. Fracture Lateral condylar physis constitute 16 to 18% of all fdistal humerus phseal fractures. Milch defined the fracture that exited through the trochleocapitellar groove as a type I (Milch type I). The type II (Milch type II) exits through the trochlea. Two mechanisms of injury have been suggested: push off or pull off. The pull off or avulsion theory is by adducting the forearm with the elbow extended and the forearm supinated & in push off theory injury is produced by applying a sharp blow to the palm when the elbow was flexed. Neglected fractures results in loss of Range of motion and angular deformity of elbow. OBJECTIVES: To analyze the results of open reduction and internal fixation MAIN OUTCOME MEASURES: Restoration of range of mation of elbow. STUDY DESIGN: Descriptive case series. SETTING: Hospital-based study, performed at Bahawal Victoria Hospital, Bahawalpur, Pakistan. RESULTS: Results will be analyzed by using Keats et al scoring system interns of range of motion & pain or weakness.

**Poster**

**Session: Paediatrics - Elbow**

**Abstract number: 20731**

**SUPRACONDYLAR LATERAL CLOSING WEDGE OSTEOTOMY IS STILL AN EFFECTIVE AND SAFE TREATMENT OF CUBITUS VARUS DEFORMITY**

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**PURPOSE:** Cubitus varus is the most common long-term complication of childhood supracondylar fracture of the humerus. Rates of cubitus varus ranging from 9% to 33% have been reported. The lateral closing wedge osteotomy (French osteotomy) is the most widely used method used to correct this deformity. **MATERIALS & METHODS:** We operated on 6 children between 2006 and 2008 for cubitus varus deformity using lateral closing wedge osteotomy. Two patients were female and four patients were male. The mean age at injury was 4.1 years. The patients ages average of 9,5 years. The average duration between supracondylar fracture and last corrective surgery was 6 years. Mean follow up period was 18 months. Patients preoperative and postoperative carrying angle were measured on the AP radiographs. We also evaluated patients by using the MAYO elbow performance scoring system. **RESULTS:** Mean preoperative elbow carrying angle was -25 degrees, mean last postop carrying angle was 8 degrees, patients preoperative flexion angle average of 88 degrees, mean postoperative flexion angle was 105 degrees. Average preoperative MAYO elbow performance score was 89, postoperative MAYO performance score was 97. According to this scoring system postoperative results estimated very good. **CONCLUSION:** In the study we experienced recurrent varus deformity after French osteotomy. We didnt experienced any complication like neuropraxia or wound infection. Patients postoperative performance scores and range of motions were better than preoperative values, so we think that lateral closing wedge osteotomy is an effective and safe surgical treatment for cubitus varus deformity.

**Poster**

**Session: Paediatrics - Elbow**

**Abstract number: 21244**

**OUTCOME OF OPEN REDUCTION AND CROSSED K-WIRE FIXATION IN SEVERELY DISPLACED SUPRACONDYLAR FRACTURES OF THE HUMERUS IN CHILDREN**

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Supracondylar fracture is the most common injury around the elbow in children. Twenty six cases of Gartland's type - III supracondylar fractures treated by open reduction and internal fixation with two crossed K-wires through the posterior approach, immobilisation for 3 weeks in plaster back splint followed by active exercises, K-wire removal in 4 to 6 weeks time and followup for 2 to 8 (average 3.1) years showed excellent results in 16, good in 5 and unsatisfactory in 5 cases. Complications included pin tract infection in 10, superficial wound infection in 5, transient ulnar nerve palsy in 3, deep wound infection in 1 and cubitus varus in 5 cases. It is concluded that open reduction and K-wire fixation should be restricted only to those cases which can not be managed non-operatively to avoid the high rate of complications associated with this procedure. Even after open reduction and internal fixation of these fractures the forearm should be immobilised in full pronation and maximum flexion to avoid risk of cubitus varus, due to loosening and sliding out of K-wires due to pin tract infection. In developing countries patients do suffer from various parasitic infestations and malnutrition leading to immunosuppression and increased rate of infection.

**Poster**

**Session: Paediatrics - Elbow**

**Abstract number: 21396**

**ELBOW DISLOCATIONS ASSOCIATED WITH LATERAL CONDYLE FRACTURE IN CHILDREN**

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**INTRODUCTION:** Elbow dislocations in children constitute 3%-6% of all elbow injuries, medial epicondyle avulsion is the commonest associated injury. **AIM:** To highlight the association of lateral condyle fractures with elbow dislocations. **METHODS:** Fourteen children, aged 5-13 years were treated for elbow dislocation and associated lateral condyle fracture in 14yrs. Eleven children had acute injuries and in three the injuries were 6-10 weeks old. The majority of injuries were posteromedially displaced, thirteen children had Milch type II fracture, and one had Milch type I injury. Five had associated medial epicondyle injury. All acute injuries were reduced under general anaesthesia and the lateral condyle was fixed by open reduction using two lateral Kirschner wires. The late injuries were fixed in the best possible position with grafting of defects. Follow up ranged 4-30 months. **RESULTS:** Using Roberts grading, there were 8 excellent to good, 2 fair and 3 poor results. **DISCUSSION:** Lateral condyle fracture with associated dislocation of the elbow is rarely reported. The diagnosis and X-ray interpretation of these injuries can be difficult as there are many ossific nuclei present. **CONCLUSION:** Systematic radiological examination of the medial and lateral components of the elbow should be undertaken, looking for associated fractures and dislocations. MRI may be necessary.

**Poster**

**Session: Paediatrics - Elbow**

**Abstract number: 21631**

**LOWER HUMERAL EPIPHYSIS INJURY IN CHILDREN, AN UNCOMMON INJURY BUT COMMONLY MISDIAGNOSED: OUR EXPERIENCE OF 23 CASES**

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**INTRODUCTION:** Traumatic Lower Humeral Epiphyseal (LHE) Injury is an uncommon, difficult to diagnose, and often misdiagnosed injury around elbow in children. Precise distinction between LHE and other injury in young children require arthrography or MRI evaluation. We present our experience of managing 23 such cases of this rare injury and its long term outcome. **MATERIAL AND METHOD:** 23 children, age range 10-days to 13 years, 19 cases came fresh while 4 reported late. Treatment - Fresh Cases: Operative stabilization with K-wires (3), Conservative in slab (16); Late Cases: Corrective Osteotomy (2), Arthrolysis (1), Intra-articular Depomedrol injections and mobilization (1). **RESULTS:** wrong diagnosis was made in 12/23 cases (Septic elbow; Soft tissue injury; Fracture lateral condyle humerus; Fracture lateral condyle with dislocation elbow; Supracondylar fracture; Nonunion lateral condyle humerus; Posterior dislocation elbow) 10 cases, treated conservatively, showed cubitus varus ranging from 5 to 20 degrees (mean-12.5 degrees). 9 cases had restricted movements at elbow. Surgery led to better results. None had restriction of supination and pronation. Overall Results in Fresh cases (Flynn et al Criterion) Excellent- 3, Good- 9 cases, Fair- 3 cases, Poor- 4 cases. **CONCLUSION:** LHE injury is rare and gives poor results if not diagnosed and managed properly. Opt for open reduction and internal fixation, if any doubt in perfect reduction, as assessment of quality of reduction by close method is difficult, as the lower part of humerus is largely cartilaginous in a growing child. Late correction improves cosmesis but fails to restore full movements.

**Poster**

**Session: Paediatrics - Elbow**

**Abstract number: 21829**

**MANAGEMENT OF CHRONIC RADIAL HEAD DISLOCATION IN CHILDREN AFTER MONTEGGIA FRACTURE**

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12 patients with chronic dislocation of the head of the radius after Monteggia fracture were complain from pain, instability, and limitation of range of motion at the elbow joint. All the patients underwent open reduction and reconstruction of the annular ligament by using the lateral slip of the triceps tendon and correction of the angular deformity of the ulna if found, with or without radial shortening. There were 7 patients with anterolateral dislocation, 3 with posterior dislocations and 2 with anterior dislocations. All were evaluated for pain, range of motion, and strength of muscles around the elbow, stability and function of the joint. The time from injury to reconstruction varied from 10 weeks to 18 months. The follow up period varied between 6 months to 2 years. There were 6 patients with excellent results, 4 patients had good results, 1 patient had fair result and 1 patient had poor result. This study demonstrates using the lateral third of the triceps tendon is an effective method of treatment of chronic post-traumatic dislocation oh the head of radius after Monteggia fracture.

**Keywords:** Radius, Dislocation, Reconstruction

**Poster**

**Session: Paediatrics - Elbow**

**Abstract number: 22275**

**INTRA-ARTICULAR MEDIAN NERVE INCARCERATION AFTER SPONTANEOUS REDUCTION OF A PEDIATRIC ELBOW DISLOCATION - CASE REPORT AND REVIEW OF THE LITERATURE**

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Intra-articular incarceration of the median nerve following closed reduction of an elbow dislocation is a rare and potentially devastating complication. We report the case of a 4 year-old boy who had an entrapment of the median nerve after spontaneous reduction of a posterior dislocation. All the cases previously reported in the literature are reviewed. The diagnostic tools and treatment options are discussed. This case represents both the youngest case of this entity in the literature as well as the only case in which spontaneous reduction of the dislocation occurred prior to medical evaluation. Although incarceration of the median nerve following an elbow dislocation is an uncommon complication, must be recognized early and explored to prevent severe consequences.

**Poster**

**Session: Paediatrics - Elbow**

**Abstract number: 22393**

**PENTALATERAL OSTEOTOMY REVISITED**

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Since P.R. French introduced the lateral closing wedge supracondylar osteotomy for correction of cubitus varus in 1959, numerous approaches have been proposed for late correction of the deformity. Reported complications with distal humerus osteotomies, such as nerve palsy, malunion, and loss of reduction have been of concern, and no one technique has been identified as offering superior results with minimal complications. The pentalateral supracondylar osteotomy for correction of cubitus varus was proposed by W. Laupattarakasem. It corrects the deformity by resecting the overgrown bone, thus addressing the varus deformity and rotational malalignment. Furthermore, it does so without reliance on intra-operative radiographic imaging. There have been concerns, however, with the ability to maintain adequate fixation following pentalateral osteotomy. In our series of cases, we have found reliably successful stabilization with a new configuration using the Joshi External Stabilization (JESS) frame. The JESS frame neutralizes forces across the osteotomy fragments, providing excellent control of the distal humeral fragment and allowing stable fixation and elbow motion throughout the healing phase to bony union. Three patients, with age at diagnosis between 3-12 years, were treated using this protocol, between 2004 and 2008. The male-to-female ratio was 2:1. The frame was kept in neutralization mode for 8 weeks, and follow-up was between 8 months and 4 years. The combination of the pentalateral supracondylar osteotomy and stabilization with the JESS frame offers a highly effective and reliable method for achieving an optimal correction of cubitus varus and eliminating recurrence of the deformity after surgery.

**Poster**

**Session: Paediatrics - Femur**

**Abstract number: 21247**

**FEMORAL SHAFT FRACTURES IN CHILDREN: STABILITY OF ESIN FIXATION**

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Elastic stable intramedullary nailing (ESIN) has become a popular treatment method in pediatric long bone fractures. Early Limb malalignment and length changes after such procedures are worrisome complications but have not yet been accurately evaluated because of the high remodeling power in growing bones. We prospectively followed 68 children (mean age: 5.6 years; range 1.9-10.5 years) with unilateral femoral shaft fractures treated with ESIN nails to detect early angular or rotational malalignment or limb-length discrepancy (LLD). The average patient weight was 21 kg (range: 10-45kg). There were 57 AO/ASIF Type A fractures and 11 Type B fractures. Malalignment was examined using plain radiographs, CT-scans, or navigated ultrasound examination after 4 to 7 months to evaluate the stability of ESIN fixation and avoid changes caused by later bone remodeling. The mean femoral length difference was 0.5 mm lengthening. Only 11 patients (16%) had a LLD of more than 10 mm. Mechanical axis deviation of more than 5° occurred in one patient. However, the mean femoral rotational angle difference was +14.5°. We observed malrotation over 15° in 32 children (47%). The data suggest ESIN fixation is associated with a high rate of malrotation.

**Poster**

**Session: Paediatrics - Forearm**

**Abstract number: 20803**

**ANALGESIA IN PAEDIATRIC FRACTURES**

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We conducted an audit in the Accident and Emergency department on all paediatric patients presenting with forearm, wrist or elbow fractures over a space of 4 months. Total patients numbered 30. We investigated whether pain score was done, how many received analgesia within 20 minutes, how many received analgesia in relation to pain score and how many had their pain score reassessed at within 2 hours. Twenty three (77%) of patients had a pain score at triage, 16 (53%) of patients had analgesia within 20 minutes on arrival, 16 (76%) had analgesia appropriate to pain score, 3 (13%) had pain score reassessed within 2 hours. Compared with previous audits improvements were recorded in all areas. This however still remains below the recommended standard. We propose a poster to be placed in triage along side a proforma to improve targets.

**Poster**

**Session: Paediatrics - Hand/Wrist**

**Abstract number: 20823**

**LARGE GIANT CELL TUMOR OF FIRST METACARPAL: A MANAGEMENT DILEMMA – A CASE REPORT**

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Giant cell tumors of first metacarpal are rare and isolated case reports have been published in literature. Lesions in hand especially those arising from metacarpal require resection with adequate margins and definitive structural reconstruction to ensure preservation of hand architecture, function and cosmesis. We report a case of a twenty six year old man presented with a large, aggressively behaving Giant cell tumor of first metacarpal. Tumor was excised enbloc and defect so created was reconstructed with fibular autograft. After initial encouraging result patient developed a late recurrence at two years. A first ray amputation was then performed.

**Poster**

**Session: Paediatrics - Hip**

**Abstract number: 20854**

**PROXIMAL FEMORAL RESECTION - INTERPOSITION ARTHROPLASTY FOR PAINFUL HIP DISLOCATION IN CEREBRAL PALSY**

Mithat ONER, Mehmet HALICI, Ahmet GUNEY, Ibrahim KAFADAR, Yildirim TURK  
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**INTRODUCTION:** The purpose of this study is to assess the outcome of proximal femoral resection with capsular interposition arthroplasty in a case series of spastic painful hip dislocations in non-ambulatory cerebral palsy. **MATERIAL AND METHODS:** This technique was performed in five hips of four non-ambulatory cases who have quadriplegic form of cerebral palsy. The age of the patients at the time of surgery was between 9- 14 years. The indications for surgery included persistent hip pain, reduction of sitting tolerance and perineal hygiene difficulties. Proximal femoral resection-interposition arthroplasty procedure was performed as described by Castle and Schneider. All patients were held in supracondylar femoral skeletal traction for three weeks postoperatively. **RESULTS:** Preoperative direct radiographs revealed hip dislocation and lateral femoral head defect in all cases. Gross examination of all resected femoral heads showed significant degenerative changes. Postoperatively, with significant pain relief; sitting tolerance, perineal hygiene and functional range of motion were improved in all cases. No major complications were seen. Type 1 heterotopic ossification was found in only one hip. **CONCLUSION:** Proximal femoral resection with capsular interposition arthroplasty is a good salvage procedure for severe spastic non-ambulatory cerebral palsy cases. This procedure provides a safe and effective means of resolving the clinical symptoms.

Poster

Session: Paediatrics - Hip

Abstract number: 21121

**OUTCOME OF PELVIC SUPPORT OSTEOTOMY COMBINED WITH SIMULTANEOUS FEMORAL LENGTHENING WITH THE USE OF THE ILIZAROV METHOD FOR THE LATE SEQUELAE OF INFANTILE HIP INFECTION.**

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BACKGROUND: Patients with an unstable hip secondary to infection in the first months of life usually have loss of bone from the proximal femur or shortening of the limb, and very often both. The sequelae include also proximal migration of the femur, abnormal gait and pain. The hip reconstruction consists of an acute osteotomy at the proximal part of the femur and of gradual distraction after distal femoral osteotomy. The aim of this study was to present the outcome of the treatment of late sequelae of infantile hip infections.

METHODS: Between 2001 and 2005, 8 patients (4 females and 4 males) with an unstable hip joint were treated in the Pediatric Orthopaedics Clinic of the Pomeranian Medical University in Szczecin, Poland. Their mean age was 11.7 years (range: 9 to 16). The main complaints were pain, leg length discrepancy and limping. All hips were unstable and in all cases we performed a valgus and extension osteotomy in the proximal femur and distal femoral osteotomy for lengthening. The average follow-up was 2.6 years (range from 0.5 to 4.7 years). RESULTS: All hips were pain free at follow-up. The Trendelenburg sign became negative in all patients. There was no limb length discrepancy immediately following treatment. Valgus extension osteotomy has provided stability of the hip joint. Stability of the hip joint and lengthening of the femur were achieved simultaneously with the use of the Ilizarov technique.

**Poster**

**Session: Paediatrics - Hip**

**Abstract number: 21209**

**SURGICAL TREATMENT OF DEVELOPMENTAL DYSPLASIA OF THE HIP AFTER WALKING AGE GROUP**

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**OBJECTIVE:** To evaluate the result of surgical treatment of neglected Developmental dysplasia of the hip with different surgical procedures. **METHODS & MATERIAL:** During the period from 1985 to 2008 we evaluate 186 patients (158 female & 28 male) all cases presented to our department after walking age, detailed history, physical examination and radiography were done. 243 hips were operated with different surgical procedures including open reduction and salter osteotomy were done in 98 hips, open reduction varus derotation femoral shortening osteotomy in 99 hips, open reduction only in 33 hips, closed reduction and salter osteotomy in 9 hips, shelf operation in 2 hips and chaiary osteotomy in 2 hips. The period of fellow up ranged from one year to 15 years all cases were evaluated clinically according to Mckay modified criteria and radiologically according to Severs criteria Result will be discussed.

**Poster**

**Session: Paediatrics - Hip**

**Abstract number: 21624**

**SEPTIC ARTHRITIS OF THE HIP IN 73 CHILDREN**

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**INTRODUCTION:** To elicit clinical signs for early detection. To study the optimum management of complications. **MATERIAL & METHOD:** 73 children with septic hips (1991-2002). 6 cases had bilateral involvement. Age 3 days – 4 years. All but four drained. **RESULTS:** 19 children developed following complications either singularly or in combination: Dislocation of hip-11, Partial / Total destruction of femoral head-9 cases, Pathological separation of proximal femoral epiphysis-4 cases, AVN of proximal femoral ossific nucleus-7 cases; 1 case showed VANISHING HEAD SIGN; Pseudoarthrosis of femoral neck-6 cases, Coxa vara -3 cases. Pathological separation of proximal femoral epiphysis and subluxed / dislocated hips were reduced / relocated either at the time of drainage or later by traction followed by bracing in abduction for 3-6 months. Valgus osteotomy for coxa vara (2 cases), Stahelis Acetabular Augmentation for uncovering of femoral head (2 cases). Follow-up 2-8 years. **CONCLUSIONS:** More than 90 percent infants are afebrile and hip rotations are free in early stages. A high index of suspicion is the diagnostic tool in early stages. Fullness on either side of adductor longus tendon was consistently noted in children with septic arthritis of hip. The condition can be easily confused clinically by retrofacial pyogenic abscess of iliac fossa. In latter it was difficult to pinch the iliac table clinically between fingers and thumb. Ultrasound proved to be extremely useful tool to differentiate between Dislocated/Destroyed/Dissociated unossified proximal femoral nucleus (femoral head) guiding management. The algorithm and optimum management of complications will be discussed.

**Poster**

**Session: Paediatrics - Hip**

**Abstract number: 21954**

**THE SURGICAL TREATMENT OF THE II TYPE KALAMCHI DEFORMITIES IN CHILDREN**

Aleh SAKALOUSKI, A.V. BELETSKI, O.V. KOVALCHUK, Y.V. LIKHACHEUSKI, M.A. GERASIMENKO, A.P. KOZLOWSKAYA  
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The II type deformities according Kalamchi after avascular necrosis of the femoral head is the most difficult for operative correction. We have performed 52 operations at this pathology. The indication to operation was instability of a hip joint with Wiberg angle more than 20°. We performed a femoral varus derotation osteotomy in children 14-16 years old with low risk of recurrence of the deformation. In patients with marked acetabular dysplasia a triple pelvic osteotomy may also be necessary. In children 11-13 years old with high risk of recurrence of the deformation we performed two kinds of operations. We used a femoral varus derotation osteotomy with epiphyseodesis of a medial part of the physis if we had normal development of the acetabulum. In another cases we used a triple pelvic osteotomy for creation of 'a stability stock' in a hip. We performed the posterior rotational hip osteotomy to move a plane of progressing deformation in functional less significant. In patients with low hip stability a triple pelvic osteotomy may also be necessary.

**Poster**

**Session: Paediatrics - Hip**

**Abstract number: 21956**

**USING OF THE POSTERIOR ROTATIONAL HIP OSTEOTOMY IN TREATMENT OF POSTSEPTIC MULTIPLANE DEFORMITY IN CHILDREN**

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We used intertrochanteric osteotomy with posterior 45°-90° rotation of the femoral head and neck proposed by Anatoly Sokolovsky in 23 cases of multiplane deformity of the proximal part of the femur in children with postseptic deformity. There were eleven female and twelve male patients in this series. The age of our patients ranged from 3 years to 16 years. The aims of the surgical intervention were reconstruction of the maximal sphericity of a loaded segment of a femoral head, normalization of the greater trochanter position, lengthening of the femoral neck. The mean value of the epiphyseal quotient increased from 48 to 98. Its improvement was marked and further during all time till the moment of bone maturing. The epiphyseal-neck quotient increased to 99 against 58 before the intervention, the neck-shaft angle became 130° against 120°. The Wiberg angle increased from 18° to 30°. In addition to it, the operation has not negative influence on a physis of a femoral head and helps to move a plane of progressing deformation in functional less significant. If necessary for improvement of stability of a joint it can be added by one of variants of the pelvic osteotomy.

**Poster**

**Session: Paediatrics - Hip**

**Abstract number: 21962**

**THE FORMATION OF THE II TYPE DEFORMITIES ACCORDING KALAMCHI AFTER AVASCULAR NECROSIS OF THE FEMORAL HEAD IN CHILDREN**

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The II type deformities according Kalamchi after avascular necrosis of the femoral head is most difficult for surgical treatment. We reviewed the records of 800 patients with the diagnosis of congenital dislocation of the hip or subluxation of the femoral head. The incidence of avascular necrosis in this study was 14%. The II type deformities according Kalam-chi was in 46 cases (42 girls and 4 boys). There were 43 unilateral and 3 bilateral deformities. Lateral physeal narrowing in children 6-9 years old and physeal arrest in children 11-12 years old, leading to a femoral neck in valgus angulation occurred in 57 per cent of the patients in this serie. The lateral inclination of the femoral head was revealed in 78,3% cases in adolescents. Subluxation was noted in 64,3% patients. The multiplane deformity of the proximal part of the femur was revealed through 1,5-2 years after this in 43% cases. As a rule, the lateral inclination of the femoral head began from 6-7 years. The formation of the deformity in children 4-5 years was noted in 15% cases. It is an 'aggressive' type of development of the deformity.

Poster

Session: Paediatrics - Hip

Abstract number: 22023

**THE PROGNOSTIC SIGNIFICANCE OF VARIOUS RADIOLOGICAL «RISK SIGNS» AT PERTHES DISEASES UNFAVORABLE COURSE**

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The result of Perthes disease in many respects depends on treatment, and its choice is based on prognostic factors of progress development. Such radiological factors are 'risk signs' or 'signs of poor progress development'. They include Gage's sign (GS), calcification lateral parts to the epiphysis heads (CLPE), lateral subluxation (LS), horizontal grows plate (HGP) heads of a hip and diffuse metaphyseal reaction proximal department of a hip (DMR). The radiological data of 40 patients with unfavorable course of Perthes disease after triple pelvic osteotomy and 20 children after conservative treatment was analyzed to define the most prognostic significant 'risk signs' and their. Groups are statistically comparable by key indicators. Frequency of 'risk signs' in both groups was similar. All patients of both groups had different LS degree. DMR were observed at 39 patients (97,5%) in the first group and 19 (95%) - in the second. CLPE was at 29 patients (72,5%) in the first group, in the second - half of cases. HGP was at 15 patients (37,5%) in the first group and 8 patients (40%) the second. GS was observed accordingly at 8 (20%) and at 6 patients (30%). We consider that when forecasting the outcomes it is necessary to pay attention to such 'risk signs' as LS, KM, and CLPE. HGP which takes place and during other dysplastic processes hip, and GS are not considerable indications of unfavorable course disease.

**Poster**

**Session: Paediatrics - Hip**

**Abstract number: 22044**

**ADDUCTORS TENOTOMY IN CEREBRAL PALSY**

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**BACKGROUND:** Children with cerebral palsy have problems in the hip resulted from spasticity. The secondary effects of subluxation and dislocation include problems with seating, gait, pain and personal hygiene. Soft-tissue releases prevent subluxation and hip dislocation. However, still controversies about the indications regarding age, surgical indications and how long do the results last in time. **METHODS:** Retrospective study of 101 spastic Cerebral Palsy patients who underwent soft-tissues releases between 1991 and 2005. Forty-four patients met the inclusion criterias. Twenty-three boys and 21 girls, 34 with diplegia and 10 with quadriplegia. Twenty-nine were non-ambulators, 5 household ambulators and 10 community ambulators. Reimers' index (RI) and acetabular index (AI) were measured, preoperative and postoperative. The mean follow-up of 5,9 years, minimum of 3 years. The mean age at surgery procedure was 6,4 years. **RESULTS:** Good result was considered if the RI was reduced or had increased less than 10%, presented in 23 patients (52%). There were no statistically significant differences according to sex, age at operation, type of distribution, function and follow-up time ( $p>0,005$ ). Improvement of the RI postoperatively was more evident in the cases of hip subluxation. A trend to poor results was found with follow-up longer than 5 years. **CONCLUSIONS:** Radiographic results allow to conclude that adductor tenotomy should be done as soon the patient has less than 30° of hip abduction, regardless the age, function, type of spasticity, RI, AI and sex, due to the benefits to the patients.

**Poster**

**Session: Paediatrics - Hip**

**Abstract number: 22045**

**THE DIAGNOSTICS OF OSTEIOD OSTEOMA OF THE PROXIMAL PART OF THE FEMUR IN CHILDREN**

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One of the favorite localizations of osteoid osteoma is the proximal part of the femur (our data: 46.2%). It is not always possible in children to obtain precise data of characteristics and localization of pain syndrome. Therefore the purpose of our study is to obtain more specific details of clinical, X-ray and histological manifestations of the osteoid osteoma of such localization. We have studied the details of anamnesis, characteristics of pain syndrome, X-ray, CT and histological manifestations in 24 patients, who were treated in 1982-2008. The duration of pain before hospitalization was 6.5 months (2-13). Its primary localization was in the distal part of the femur and (or) knee joint in 19 cases (79.2%). Since the appearance of pain was linked with the possible trauma in the most of cases, the initial diagnoses were the contusion, post-traumatic knee synovitis, etc, and the corresponding conservative treatment was realized. In some cases, even the X-ray examination of knee joint was performed, but no any pathology was revealed. Only when the pains were strengthened and migrated to the upper part of the femur, and other manifestations of the hip joint pathology were appeared, the clinical diagnosis of osteoid osteoma was established. X-ray and CT examination confirmed the diagnosis. Routine surgical treatment was performed successfully, and no any histological features were revealed in all cases. Thus, the primary diagnostics of the osteoid osteoma of this localization in children is hampered by absence on the early stages of the explicit clinical manifestations.

**Poster**

**Session: Paediatrics - Hip**

**Abstract number: 22415**

**PREOPERATIVE FERRITIN ESTIMATION IS IMPORTANT IN CHILDREN WITH CEREBRAL PALSY**

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A significant proportion of children with cerebral palsy (CP) are malnourished. This is particularly the case for trace elements, vitamins and minerals. Children with CP undergoing major orthopaedic procedures lose blood intra operatively leading to post operative anaemia. The aim of our study was to estimate the prevalence of low levels of serum ferritin in children with CP awaiting major orthopaedic surgical intervention. The ferritin levels and haemoglobin (Hb) were estimated pre-operatively in 35 children with CP (CP group) undergoing major orthopaedic surgery (Hip reconstruction or Single event multi-level surgery). During the same period, we randomly identified 1000 children (Control group) who underwent Ferritin estimation as part of routine investigations. A significant proportion of children in the study group had low levels of serum ferritin in spite of having normal Haemoglobin. It is well-recognised that commencement of iron either orally or intravenously in the post-operative period does not accelerate recovery from anaemia secondary to blood loss. We therefore conclude that children with cerebral palsy undergoing major orthopaedic surgery must have their ferritin levels estimated and optimised well in advance of their surgery.

**Poster**

**Session: Paediatrics - Hip**

**Abstract number: 22423**

**THE USE OF BOTULINUM TYPE A IN 84 CHILDREN WITH CEREBRAL PALSY**

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AIM: Botulinum toxin type A is a relatively new method of spasticity treatment in children with cerebral palsy. It has been the focus of extensive research since its application to cerebral palsy 16 years ago. Management with cerebral palsy is the focus of considerable resources, so that evaluation of the efficacy of new and established treatment was our aim. The purpose of this study was to evaluate the results of use of botulinum toxin (B.T.) in 84 children. MATERIAL AND METHODS: The essence of the method was to inject botulinum toxin (Botox, Allergan) in 84 patients with cerebral palsy aged 2 to 17 years. The dose of 3-5 units/kg was used. Electromyographic guidance was used in selected cases to confirm appropriate localization of the injection needle in specific muscles immediately before injection. All the children were undergoing physiotherapy program with monitoring of their baseline states for 3 months before botulinum toxin injection. RESULTS: The peak effect was noticed by 1-2 weeks, lasted 3-10 months. The measuring of outcome over 4-23 months included clinical assessment based on opinions of physicians, parents, physical therapists, functional evaluating of gait (PRS), muscle tone grading (modified Aschworth scale) and measuring the range of motion. DISCUSSION/CONCLUSION: The results were statistically significant, included decreased spasticity, improvements of gait and facilitating physical therapy. The application was repeated when the effects cased. Undesirable side effects or complications were not observed.

**Poster**

**Session: Paediatrics - Humerus**

**Abstract number: 20251**

**FRACTURES AFTER BONE LENGTHENING**

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**PURPOSE:** Fractures following bone lengthening is a frequent complication in the literature. We report the incidence of development of this complication in our center over 10 years period & the management. **METHODS:** From 1996 till 2006, 1265 lengthening procedures of the Tibia or Femur were performed in our center. We have been able to follow 996 cases for more than one year [402 Femoral & 594 Tibial]. 42 cases developed fractures after fixator removal [22 Tibial & 20 Femoral]. Treatment was conservative in 14 cases, percutaneous K-wire fixation & casting in 20 cases, reapplication of the fixator in 6 cases, plating in one case & IMR in one case. The patients were assessed according to the residual lower limb length inequality, union, functional activity, axis deviation & satisfaction of the patients. **RESULTS:** All cases united within 7 weeks to 18 weeks. The follow-up period ranged from 1 year to 5.5 years. 3 cases had another refracture. Residual knee stiffness developed in 4 cases & equinus foot deformity in 2 cases. Deep infection developed in one case after treatment with IMR. **CONCLUSIONS:** Fractures following bone lengthening can be treated conservatively or by percutaneous pinning & casting. IMN may lead to deep infection. **SIGNIFICANCE:** Conservative treatment is a valid option in cases with fractures after bone lengthening.

**Poster**

**Session: Paediatrics - Humerus**

**Abstract number: 20806**

**ANTERIORLY DISPLACED SUPRACONDYLAR FRACTURES OF THE HUMERUS ARE CAUSED BY LATERAL ROTATION INJURY: A NEW HYPOTHESIS**

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During last 20 years we treated 1520 cases of supracondylar fractures of humerus in children. Only 22 were displaced anteriorly (flexion type) rest were displaced posteriorly (extension type). Anteriorly displaced fractures were caused by backward fall from cycle's carrier, swing, tree or wall. The supracondylar fracture of humerus is an oblique fracture-medial spike of the proximal fragment is longer than lateral spike. When children fell down posteriorly (backwards) on out stretched hand with forearm supinated lateral rotation occurred at fracture site so the longer medial spike of proximal fragment displaced posteriorly in relation to distal fragment. Therefore the only place left for the distal fragment is anteriorly where it slips due to obliquity. On the contrary all the posteriorly displaced supracondylar fractures were caused by fall anteriorly (forward) when children were walking, running, or playing. When the child falls anteriorly on outstretched hand the forearm is pronated and medial rotation occurs at the fracture site. The longer medial spike of proximal fragment displaces anteriorly. So the only place left for the distal fragment is posterior. Thus it is the rotational displacement at the time of injury which decides the postero-anterior displacement of the distal fragment. The anteriorly displaced supracondylar fractures are not caused by fall on a flexed elbow as traditionally described in literature. It is caused by lateral rotation injury when child falls backwards.

**Poster**

**Session: Paediatrics - Humerus**

**Abstract number: 22133**

**CAMPANICCI TYPE 5 ABC TREATED WITH NON VASCULARIZED FIBULA & AUTOGENIC CANCELLOUS GRAFT - A CASE REPORT**

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**BACKGROUND:** Aneurysmal bone cysts are uncommon bone lesions, about 1% of all primary bone tumors constitute these lesions. Metaphyseal regions of Upper extremity are the common site. Diagnosis is made by radiological examination and classified according to Campanicci staging system. Multiple treatment options are available. **CASE DESCRIPTION:** A 16 year female presented with swelling and pain in proximal part of humerus and restricted shoulder movements. Imaging studies suggested a diagnosis of Aneurysmal bone cyst. According to Campanicci staging the tumor was type 5 (i.e. destruction of cortex and extension into the soft tissues). Treatment was done by surgical excision of tumor and reconstruction of the defect by non vascularized fibula graft stabilized by K wire and supplemented by autogenous cancellous bone grafts. Patient had good recovery during post operative period. **CONCLUSION:** This report suggests that the treatment option for type 5 ABC is excision of the tumor and reconstruction by non vascularised fibula garft, which is a simpler, less demanding and shorter procedure with good long term result and fewer complications.

**Poster**

**Session: Paediatrics - Knee**

**Abstract number: 19345**

**A PAEDIATRIC FEMORAL PCL SOFT TISSUE AVULSION**

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There is nothing described within the peer review literature on the subject of Paediatric Posterior Cruciate Ligament (PCL) injury and its management, although the subject of Anterior Cruciate Ligament (ACL) injury has been discussed with no true consensus on management yet being reached. Paediatric PCL injury is rare, difficult to diagnose and more over poses a significant technical challenge to the treating surgeon if surgery is contemplated. Here we present the case of a 10 year old keen soccer player, who following clinical and radiographic assessment was diagnosed with an isolated proximal peel type PCL detachment. This was repaired by way of a new arthroscopic surgical technique allowing tensioned reattachment of the PCL to its femoral attachment point.

**Poster**

**Session: Paediatrics - Knee**

**Abstract number: 19921**

**A CASE STUDY OF CONGENITAL DISLOCATION OF BOTH KNEE ITS EARLY TREATMENT AND OUT COME**

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Congenital dislocation of the knee is extremely rare condition. The condition is diagnosed clinically during birth or in neonatal period, frequently associated with other congenital anomalies like Congenital Dislocation of Hip cardiac malformation, and neuromuscular imbalance. Females are more prone to this condition. Having incidence of 0.017 per million. I am presenting one case. A female new born (1 hour age) having bilateral hyperextension deformity (rigid curve like sword) of knee with inability to move her knee in flexion position. Both knee dislocation Grade III confirmed clinically and radio logically. Immediately without anesthesia gradually and gently both knee dislocation reduced with hand traction and put under plaster slab in 90 degree of knee flexion for three days. Post procedure patient evaluated and found mild Atrial Septal Defect and open Patent Ductus Arteriosus, rest no Congenital Dislocation of Hip found ultrasonically. Within three days splint removed and make patient mobilized and found no instability in knee joint and range of motion -5° to 120° and after 10 days 150° knee flexion achieved. Hence if patient not treated early may require ultrasonological evaluation and its treatment, preferably non-operative with gradually increased passive flexion of the knee. In certain cases surgery may be justified. In a majority of cases, the children achieve acceptable knee-function after treatment. In the region of Gujarat Saurashtra in India, finding journals no such case documented till date, which shows rarity in this region.

**Poster**

**Session: Paediatrics - Knee**

**Abstract number: 20493**

**BIL-MEGAPATELLARS WITH CHRONIC INFANTILE NEUROLOGIC CUTANEOUS ARTICULAR (CINCA) SYNDROME**

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CINCA syndrome is a rare chronic inflammatory disease, which is characterized by neonatal onset of fever, urticarial rash, central nervous system (CNS) involvement, and deforming arthropathy. Sixty percent of the patients have mutation in the cold-induced autoinflammatory 1 (CIAS1) gene. The favorite sites of arthropathy are reported to patella, femoral condyle, elbow and so on. A six-year-old boy who neonatal onset of meningitis, urticarial rash and bilateral arthritis of the knee without mutation of CIAS-1 gene, has diagnosed of CINCA syndrome. Bony overgrowth of bilateral patella and limitation of knee range of motion (ROM) was gradually exacerbated with pain. Both patellars were symmetry at a size of 9 cm by 6 cm. So-called circumduction gait was observed. Arthroplasty was performed by removal of a part of redundant parts of patellars. Active ROM exercise of the knee was instituted at 3 weeks and gait was started at 6- weeks postoperatively. His gait was return to almost normal and his knee ROM was 10~100 degrees respectively after 1 year follow-up. Although further observation was necessary, the arthroplasty by miniaturizing megapatellars improved his gait with remission of knee pain.

**Poster**

**Session: Paediatrics - Knee**

**Abstract number: 21640**

**ROLE OF MRI IN DETECTING EARLY PHYSEAL CHANGES DUE TO ACUTE OSTEOARTICULAR INFECTION AROUND THE KNEE JOINT**

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Physal changes due to any etiology in children are usually diagnosed once the deformity is clinically evident. Between January 2006 and June 2007, fifteen children who suffered from acute osteoarticular infection around the knee joint were studied. They were called up for follow up after 6 months of the onset of infection. All patients were evaluated by clinical and roentgenographic examination before undergoing MRI study of bilateral knees 'with affected knee serving as control'. Abnormal findings in metaphysis and/or epiphysis of the involved physis in MR imaging were observed in 5 children. This group of 5 children was compared with other 10 children for clinical presentation and course of disease. Though the sample size is not large enough to be statistically significant conclusion, we believe that MRI is a useful tool in the evaluation of growth plate insult in the early period following osteoarticular infection.

**Poster**

**Session: Paediatrics - Knee**

**Abstract number: 21745**

**THE ROLE OF MRI IN DIAGNOSIS OF KNEE INTRAARTICULAR STRUCTURE INJURY IN SKELETAL IMMATURE POPULATION**

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The purpose of this study was to compare the finding of preoperative MRI with knee arthroscopy in skeletal immature population. METHODS: one hundred eight consecutive knee arthroscopies performed between 2000 and 2007 were retrospectively reviewed. Inclusion criteria knee injuries involve the anterior cruciate ligament and posterior cruciate ligament, meniscus injury, osteochondral lesions, plica that was predicted preoperatively or subsequently found at arthroscopy were included in the review. Fifty one patient who met these criteria they went for MRI, all these operative report were reviewed for all 51 patient then all these finding were then compared with those predicted by the preoperative MRI finding, Specificity, sensitivity, positive predictive value, negative predictive value and accuracy. Were calculated for the ACL, PCL, medial meniscus, lateral meniscus, plica, osteochondral lesions in those skeletal immature patients. RESULTS: From the 51 patients with the preoperative MRI were reviewed, thirty nine had suspected actual meniscal or ACL pathology. Other diagnosis noted at the time of surgery. DISCUSSION: From the result it shows decrease sensitivity, specificity, positive predictive value and accuracy for all essential categories of pathological change the only exception is the ACL & PCL.

**Poster**

**Session: Paediatrics - Knee**

**Abstract number: 22080**

**USE OF ASYMETRIC STAPLING FOR TREATMENT BLOUNT DISEASE**

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Blount disease is an uncommon growth disorder characterized by disordered ossification of the medial aspect of the proximal tibial physis, epiphysis and metaphysis. For treatment of the given pathology are used every possible corrective osteotomies. However, as at tibia vara the medial part of physis is amazed, and with the osteotomies the axis of finiteness without influence on a primary link ethiopathogenesis diseases in due course there is a deformation relapse is corrected only. Owing to what there is a necessity for performance repeated, time of numerous operations up to the termination of growth of the child. At twelve patients from four till thirteen years are executed corrective osteotomies shins. In the addition, to each patient lateral parts of physis tibia stapled for prevention of relapse of deformation. At each of twelve patients one operative intervention concerning relapse of deformation which arose in terms from eight months till one and a half years is executed a minimum. Average term of supervision has made 1,8 years. At eleven patients of signs of relapse is not present. The axis of the operated finiteness corresponds reached on operation. Stapling slows down growth of not amazed part of a physis and can render good help for treatment of such pathology as Blount disease. The combination of these two techniques can if not completely to exclude, it is essential to reduce occurrence of relapse of deformation that affects quantity of operations at children.

**Poster**

**Session: Paediatrics - Knee**

**Abstract number: 22195**

**STAPLING GROWTH PLATE FOR CORRECTION LEG LENGTH DISCREPANCY AND ANGULAR DEFORMITY**

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Since 1995 stapling was performed in 72 patients. Most often the reasons of the LLD were congenital and posttraumatic deformity whereas cause of AD were determine displasia of the epiphysis and metaphysis. Stapling was performed at 38 patients on account of LLD and 34 on account of AD at the age of 4 to 15 year. In 35 cases stapling concerning shortening was used as an independent method, in three was combined with lengthening in the device of external fixing. At angular deformations stapling as an independent method was used in nineteen and in fifteen in a combination with corrective osteotomies various segments of the leg. It was used to prevent or remove relapse occurrence. We estimated result as good at final LLD made less than 1.5 sm; satisfactory - 1.5 - 2.0 sm; the pure result is more than 2.0 sm. Good results are received by us in 78 %, satisfactory in 15 % and pure results are received in 7 %. The result of treatment of angular deformations was estimated on tibiofemoral angle. The good result - when a corner corresponds anatomic and makes 5-7° at stapling application as independent method or not signs of relapse of deformation more than two years at a combination of a method with corrective osteotomy. Good results are received in 75 % of cases. Stapling is an alternative method of treatment LLD and AD which can be used at children and teenagers in growth.

**Poster**

**Session: Paediatrics - Shoulder**

**Abstract number: 20809**

**MASSIVE OSTEOCHONDROMA OF SCAPULA REQUIRING TOTAL SCAPULECTOMY - A CASE REPORT AND BRIEF REVIEW OF LITERATURE**

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CASE REPORT: A two-year-old child presented in the Orthopaedic OPD with an irregular swelling over left scapular region; size being equal to a tennis ball. On clinical examination, left scapular swelling was irregular, firm, non tender, well localized to lower third of scapula and moving with the scapulothoracic motion. Also, pseudowinging of left scapula was observed. Antero-posterior plain radiographs of the shoulder showed a heterogeneously calcified, irregular mass lesion with well defined margins arising from lower third of scapula on both costal and dorsal surfaces. The cortex of the mass appears continuous with the parent bone. MRI of the lesion revealed a mushroom-shaped bony protrusion on the costal and dorsal surface of the scapula a cartilage cap thickness < 3mm. The presumptive diagnosis of osteochondroma, a benign entity, was established. Unfortunately, the child was lost to follow up for almost two years, when he returned with a mass lesion three times the initial size, involving almost the whole of the left scapula Repeat X rays and MRI showed gross increase in the size but the cartilage cap thickness was unchanged. Surgery: The osteochondroma was involving almost the entire scapula and thus complete scapulectomy was performed Post operative period was uneventful. Immobilization in chest arm bandage was continued until four weeks. Patient was then allowed to do passive and active movements at the pseudo-shoulder joint. At three months post-op, patient regained functional range of motion. Patient has been kept under regular follow up since then.

**Poster**

**Session: Paediatrics - Shoulder**

**Abstract number: 21397**

**PYOGENIC OSTEOMYELITIS OF THE CLAVICLE IN CHILDREN**

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**INTRODUCTION:** Haematogenous osteomyelitis of the clavicle is rare. The incidence is 1%-3% and the diagnosis may be missed initially for conditions like trauma. **AIM:** To highlight the clinical presentation and outcome of haematogenous osteomyelitis of the clavicle in children. **METHODS:** In 14 years, 20 children aged 3-12 years were treated for osteomyelitis of the clavicle. One child had bilateral involvement. There were 12 acute presentations (<6days) and 8 had chronic osteomyelitis (3-6 weeks). Ten children had other sites of involvement. Pain, fever and swelling were the common clinical features in the acute cases. Pain, discharging sinuses and protruding sequestra were the features in chronic cases. The acute lesions were treated by incision and drainage, *Staphylococcus aureus* was cultured in all. The chronic lesions were treated by sequestrectomy and curettage in 4 children and subperiosteal excision of the clavicle in 4 others. **RESULTS:** All the acute cases healed radiologically by 3-4 months. The chronic cases healed with dressings by 6-8 months. Those with subperiosteal excision reconstituted the clavicle and had good shoulder function. Follow up ranged 6 months to 3.5 years. **DISCUSSION:** Pyogenic osteomyelitis of the clavicle is rare and may be missed initially. In younger children trauma and pseudoparalysis are usually diagnosed. The chronic bone lesions can be confused with bone tumors and tuberculosis, biopsy may be necessary.

**Poster**

**Session: Paediatrics - Shoulder**

**Abstract number: 22270**

**OPEN REDUCTION AND INTERNAL FIXATION OF IRREDUCIBLE DISPLACED FRACTURES OF THE CLAVICLE SHAFT IN CHILDREN**

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**PURPOSE:** The clavicle is the bone most frequently fractured in children, and midshaft fractures represent approximately 90% of them. Most heals despite almost continuous motion of the upper extremity and can be treated conservatively. In exceptional situations operative treatment is required. **METHODS:** We report six cases of irreducible displaced fractures of the clavicular shaft that required open reduction and internal fixation. All patients presented complex mid-shaft fractures (Allman group I) with third fragment interposed and marked displacement. The surgery was indicated to prevent potential skin ulceration. Anterior-inferior contoured 3.5-mm reconstruction plate and screws were used as method of fixation. **RESULTS:** Mean age was 15.5 years (r, 13-17 years). Follow-up ranges from 6 to 24 months. Clinical and radiographic union was present at a mean of 6 weeks. Shoulder motion was excellent in all patients. There were no infections or hardware failures. Only one patient required hardware removal because of implant prominence problems. **CONCLUSIONS:** Open reduction and internal fixation of selected middle-third fractures in children results in restoring of the clavicle to its normal length, early healing and an excellent return of function. Consideration should be given to reconstruction in irreducible fractures with marked displacement that threaten the integrity of the skin.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 19752**

**THREE-STAGED CORRECTION OF SEVERE RIGID IDIOPATHIC SCOLIOSIS USING HALO-GRAVITY TRACTION**

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**STUDY DESIGN:** A retrospective serie. **Summary of Background Data:** To our knowledge, few series reported the use of perioperative halo-gravity traction comparing its results to classic two staged correction without traction. **OBJECTIVE:** To review clinical and radiographic results of perioperative halo-gravity traction in severe rigid curves analyzing its efficacy, advantages and possible complications. **METHODS:** The study included a total of 47 patients with severe rigid idiopathic scoliosis, 21 patients had a three staged correction by an anterior release, 2w of halo-gravity traction then posterior instrumentation (Group 1) and 26 who underwent anterior release followed by correction using a posterior construct (Group 2). The average age was 18y+1m and 16y+2m respectively. The average preoperative dorsal and lumbar scoliosis in Group 1 were 106.5° (range 92-142°) and 87° (range 77-103°) respectively and at Group 2 were 102° (range 90-115°) and 81° (range 75 -100°) respectively. **RESULTS:** A significantly better correction was achieved in Group 1 (an average of 59%) compared to Group 2 (an average of 47%). At an average of 52 months radiographic follow-up, the loss of correction averaged 8° for Group 1 and 11° for Group 2. A shorter hospital stay was found in Group 2; a shorter operative time was found in Group 1 and there was no significant difference in blood loss, early or delayed complications. **CONCLUSIONS:** Halo-gravity traction is an efficient, safe modality; its application over a period of 2w led to better correction, shorter operative time with no significant complications.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 19763**

**THREE DIMENSIONAL CORRECTION OF NEUROFIBROMATOSIS SCOLIOSIS**

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**STUDY DESIGN:** A retrospective series. **Summary of Background Data:** The surgical management of dystrophic neurofibromatosis curves is a demanding procedure with uncertain results. Surgical difficulties include a poor bone stock, sharp angulation and a delicate dural sac. **OBJECTIVE:** To review the clinical and radiographic outcome of three-dimensional correction of severe rigid neurofibromatosis curves analyzing its efficacy, safety and possible complications. **METHODS:** The study included 23 patients with rigid neurofibromatosis deformities. The average age was 14 years (range 11 - 19y). All patients had typical dystrophic curves and the apex of the deformity was dorsal (10 patients); dorsolumbar (11 patients) and lumbar (2 patients). All patients had a two staged procedure; an anterior release followed latter by posterior instrumentation augmented by sublaminar wires. There were a total of 142 wires with an average of 6.5 wires/ patient. **RESULTS:** Patients were followed-up for an average of 4y (range 3 - 6y). The mean Cobb angle of the main curve was 72.2° before surgery corrected to an average of 29° and the loss of correction had an average of 4°. Sagittal alignment improved from an average of 12° to an average of 47° and rotation was corrected by an average of 34%. There were no dural tears during passage of the sublaminar wires and no neurological or implant related complications. **CONCLUSIONS:** The use of extensive and vigorous anterior release with posterior hybrid instrumentation has proved useful and effective in the treatment of these difficult cases.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 19952**

**THE ROLE OF POSTERIOR SPINAL FUSION IN HEALED POST-TUBERCULAR KYPHOSIS IN CHILDREN**

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**INTRODUCTION:** Tubercular kyphosis in children is cosmetically & functionally disabling with a fear of late onset paraplegia. Correction of deformity is difficult and hazardous. We propose posterior-fusion done in highly selective kyphosis resulting in self-correction or prevention of progression, avoiding later surgeries and complications. **CLINICAL METHODS:** A prospective study of 20 patients over 5 yrs. Selection Criteria: a) healed tuberculous kyphosis; b) progression of kyphosis at serial follow-up; c) No > 2 spine-at-risk signs present. Posterior Fusion in situ without instrumentation done. Kyphosis correction assessed by clinical & radiological improvement in K angle of deformity. **RESULTS:** 12 dorsal, 6 dorso-lumbar and 2 lumbar cases. 16 patients had no spine-at-risk signs, 4 had <2 spine-at-risk signs. 19 patients had a progressive increase in angle pre-op. Mean follow-up: 4 yrs. Following fusion 75 percent patients showed a self-correction & clinical improvement. 20% had static angle. Worsening in 1 patient. **DISCUSSION:** Kyphosis can pose later a risk of cardio-respiratory embarrassment and late-onset paraplegia. 39% children show worsening kyphus (Type IBgroup; Rajsekaran) Posterior fusion with autogenous cancellous chips along with allograft was done in all. Self-correction is achieved by continued growth of anterior vertebral epiphyseal end-plates causing selective anterior-column growth. The pivot is the posteriorly fused mass and moment of the superior and inferior vertebral arms gives correction. With destruction of end-plates, the posterior-fusion gives complementary global fusion and halts the progression. **CONCLUSION:** Posterior Spinal Fusion is simple, safe, acceptable and less morbid with good results, changing long-term disability of patients.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 20669**

**COMBINED ANTERIOR AND POSTERIOR CORRECTION OF ADOLESCENT IDIOPATHIC SCOLIOSIS IN THE LATERAL DECUBITUS POSITION - A DIFFERENT TECHNIQUE**

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**INTRODUCTION:** Adolescent idiopathic scoliosis is potentially serious issue. Wherever combined anterior and posterior corrections are needed or it involved change of position during surgery. This adds to the risk of the patient and also involves extra efforts on the theatre manpower. In this study a different technique of scoliosis correction in which both anterior and posterior corrections were done in the same sitting in same position. The lateral decubitus position. To our knowledge, this approach has not been reported previously. **METHODS:** 20 patients of adolescent idiopathic scoliosis with an average age of 14.5 years, at our institution between 2003 and 2005, were analyzed. All were undergone combined anterior and posterior corrections and fusion in the lateral decubitus position. SRS outcome instrument chart were used. Indian implants were used in all patients with all hook system posteriorly and all screw system anteriorly. **RESULTS:** The average preoperative curve was 80° which improved to 20° at follow-up. The average correction of upper and lower compensatory curve improved by 80% and 90% respectively. All the patients had solid fusion at latest follow up. SRS questionnaire revealed a satisfactory score of 4.5 out of 5, with an over all satisfaction score of 84. **CONCLUSION:** This new approach is a challenging but safe and effective. The result shows excellent correction in lateral decubitus position without changing the position of the patient. This reduces the risk to the patients, the hospital stay and cost involved in the surgery.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 20820**

**PEDICLE SHIFTING OR MIGRATION AS A CAUSE OF CURVE PROGRESSION AFTER POSTERIOR FUSION: AN INTERESTING CASE REPORT AND REVIEW OF LITERATURE**

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Progressive loss of deformity correction after scoliosis surgery in growing child has been variously described. Various mechanisms described have been Crankshaft Effect, pseudoarthrosis, implant failure(loosening/breakage), Biological Plasticity, choosing wrong levels, excessive apical translation causing decompensation by unfused segments, progressive etiology, inadequate anchorage provided by some older instrumentation systems, etc. Though there have been claims that segmental pedicle instrumentation might prevent Crankshaft Phenomenon by providing a more rigid fixation, numerous studies have shown progressive loss of correction even after segmental pedicle instrumentation. Through study of this case and review of literature, we have tried to explain a previously undescribed mechanism of Pedicle Migration or Shift with longitudinal growth of the spine with biological remodelling of plastic posterior fusion mass as well as pedicles which may explain at least few cases of deformity recurrence as in this girl 10.6 years old who was fused posteriorly before her prepubertal growth spurt but showed progressive loss of operative correction during subsequent follow up.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 20891**

**RAPID PROTOTYPING TECHNOLOGY (RPT) FOR SPINAL DEFORMITY: A CASE REPORT**

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**INTRODUCTION:** The production of a copy of a bony deformity with complex geometry is one of the important applications of two modern computer-based technologies i.e. rapid prototyping (RP) and reverse engineering (RE). A real physical 3D model is generated using computer software generated display images based on CT/MRI scans by RP. **METHODS:** Congenital scoliosis presents with the challenge of complex reconstruction in an immature axial skeleton. X-rays & CT/MRI scans used routinely for evaluation and planning on occasions provide inadequate information on the precise three-dimensional extent of bony defects. **RESULTS:** We present a case report about use of rapid prototyping in management of congenital scoliosis in a 2½ yr old child with a T10 hemivertebra. An anatomical model was created by RP technology which helped to understand complex anatomy, plan hemivertebra resection and facilitated 360 degrees visualisation of pedicles for planning entry points, trajectories, screw lengths & contouring of rods during posterior instrumentation. Pre-operative surgical rehearsal was carried out before the actual surgery on the patient. A near anatomical coronal alignment and sagittal balance of the spinal column was restored post-operatively and is maintained at eighteen months post-op. **CONCLUSION:** RP medical models serve as teaching aids and facilitate surgical planning and rehearsal. They also serve as additional tool in surgeons' armoury against possible medico-legal action and validate surgical decision making for complex deformity corrections of the growing spine.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 20892**

**MANAGEMENT OF MULTI-PLANAR CERVICO-THORACIC DEFORMITIES IN PEDIATRIC SPINE: MINIMUM THREE YEAR FOLLOW-UP RESULTS**

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There is paucity of literature on management of rigid/severe kyphoscoliotic deformities at cervico-thoracic junction of paediatric spine. Five patients aged 10.7-16.2 years (mean 13.4y) having mean cervical kyphosis (CK) of 37 (range 10-60) with its apex between C2-C7-T1 & co-existent scoliosis in cervico-dorsal/upper-dorsal region measuring a mean Cobb angle of 48 (range 25-85) managed operatively and followed up prospectively for mean 3.9 years (range 3.6-5.9y) formed the study cohort. The etiologies were Neurofibromatosis (3) & Congenital Scoliosis with Cervical Tuberculosis (2). Pre-operative halo traction was used in 4 patients. Three patients who had neurodeficit underwent staged combined anterior/posterior surgeries whilst 2 with normal neurology had single stage posterior surgery. Modified manubriectomy was performed to instrument caudal vertebra. Correction of kyphosis was achieved by intra-operative adjustment of the head assembly with controlled distraction, strut grafting using autologous fibula and anterior instrumentation. The post-operative C2-C7 kyphosis measured -5-15. Mean corpectomies performed were 3 (range 1-4) and mean anterior column defect reconstructed was 34mm (25-44mm). The average graft subsidence was 5mm (3-8mm). All 3 patients with neurodeficit improved post-operatively to Frankel E (2) and D (1). One patient continues to have left hand grip weakness at 3.7 yrs post-op. One patient had persistent dysphagia (>3 mo). Neurofibromatous CK of >40 and post-tuberculous cervical kyphosis with ≥2 spine at risk radiological signs, fused facet joints due to disease process or/and presence of neurodeficit requires staged surgery with anterior column reconstruction. Emphasis should be on decompression/correction of kyphosis.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 21140**

**GIANT CERVICAL EXOSTOSIS- A CASE REPORT**

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We report a rare case of an 8 year old girl who presented with a giant cauliflower like autofused pedunculated osteochondroma as a part of MHE arising from spinous processes of second to sixth cervical vertebrae without any neurological deficit. The osteochondroma measured 10cmX9cmX8cm on the posterior aspect of the neck hampering her neck movements. She was successfully treated by enbloc excision without any recurrence.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 21454**

**THE EFFECT OF PROXIMAL JUNCTIONAL KYPHOSIS (PJK) IN PATIENTS THAT UNDERWENT SPINAL SURGERY FOR SCOLIOSIS: TWO YEARS OF FOLLOW UP**

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The aims of the study were to evaluate, the effect of surgery on PJK and their association with the sagittal balance. A retrospective study including 15 scoliosis patients operated during the years 2002-2007. Immediate postoperative and two years postoperative period. Cobb angle at the main curve, the coronal balance (CB) and sagittal balance (SB), the kyphosis, lordosis and PKJ were measured. Twelve patients showed negative preoperative SB and three positive. The mean percentage of loss of correction for the main curve was  $6\pm 6.83$ . Difference was found between preoperative and postoperative on Cobb ( $59\pm 11.7$  vs.  $22\pm 6.4$ ;  $P= 0.001$ ). In the other hand, differences were found between immediate postoperative and two years postoperative on Cobb ( $22\pm 6.4$  vs.  $26.8.7$ ;  $P= 0.006$ ), Kiphosis ( $21\pm 6.1$  vs.  $24\pm 7.9$ ;  $P= 0.01$ ), lordosis ( $49.8\pm 8.0$  vs.  $54\pm 9.1$ ;  $P= 0.03$ ). Differences were found between preoperative and two years postoperative on PJK ( $6\pm 4.7$  vs.  $11\pm 8.7$ ;  $P= 0.035$ ). Association was found between PJK at preoperative and PJK at two years of follow up ( $\rho=0.73$ ;  $P= 0.002$ ). No significant association were found between PJK and Kyphosis ( $\rho= 0.319$ ;  $P= 0.25$ ) or PJK and SB ( $\rho= 0.37$ ;  $P= 0.17$ ). We did not find association between PJK, two-years postoperative, degree of Kyphosis and positive SB. A limitation of this study was the sample size.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 21476**

**INFLUENCE OF THE MODIFICATION OF THE LUMBAR CURVE ON THE BALANCE OF THE SHOULDERS IN THE PATIENTS INTERVENED BY SCOLIOSIS**

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The aim was to evaluate the behaviour of the lumbar column and its influence in the balance of the shoulders. Twenty-one patients by scoliosis (19 women and 2 men; age:  $19\pm 8.8$  years) in the University Hospital of the Canaries. They were evaluated using simple X-ray photography of complete column. The angle of the clavicles, the inclination of T1, Cobb of the lumbar curve, the costo-pelvic distance, the pelvic obliquity and dysmetry of the lower limbs were measured pre and postoperatively. Preoperative ( $37.5\pm 13.8$ ) and postoperative ( $14.7\pm 10.1$ ) Cobb of the lumbar curve;  $P < 0.001$ . Preoperative ( $47\pm 20.91$ ) and postoperative ( $59.4\pm 13.1$ ) costo-pelvic right distance;  $P = 0.008$ . A negative relation was observed between the clavicular angles and lumbar Cobb in the postoperative ( $\rho = -0.48$ ;  $p = 0.032$ ). The postoperative correlation between costo-pelvic left side and the clavicular angle was  $\rho = -0.50$  ( $p = 0.16$ ). The relationship between the pelvic obliquity pre and postoperative:  $\rho = 0.91$ ;  $p < 0.001$ . Relation between postoperative pelvic obliquity and right clavicular angle:  $\rho = 0.59$ ;  $P = 0.026$ . We demonstrated that the lumbar angulación is a predictor of the change in the balance of the shoulders in the postoperative in patients with scoliosis.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 21715**

**A META-ANALYSIS OF THE CLINICAL EFFECTIVENESS OF SCHOOL SCOLIOSIS SCREENING**

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The use of scoliosis screening remained controversial and its clinical effectiveness had been diversely reported. The objective of this study is to evaluate the best current evidence on the clinical effectiveness of screening for adolescent idiopathic scoliosis by meta-analysis. Three databases were searched. Studies were included if they adopted a retrospective cohort design, considered a programme that utilised either the forward bending test (FBT), angle of trunk rotation, or Moiré topography, reported results of screening tests and radiographic assessments, screened adolescents only, reported the incidence of curves with minimum Cobb angle of 10 or higher; reported the number of referrals for radiography. Reviews, comments, case studies and editorials were excluded. Thirty-six studies were selected. The pooled referral rate for radiography was 5.0%. The pooled positive predictive value (PPV) for detecting curves $\geq$ 10, curves $\geq$ 20 and treatment were 28.0%, 5.6% and 2.6% respectively. There was substantial heterogeneity across studies. Meta-regression showed programmes that used FBT alone reported a higher referral rate (OR=2.91) and lower PPV for curves $\geq$ 10 (OR=0.49) and curves $\geq$ 20 (OR=0.34) than programmes used other tests. Only one small study followed students up to their skeletal maturity and reported the sensitivity of screening, but the specificity was not reported. No severe publication bias was noted. The use of FBT alone in scoliosis screening is insufficient. We need large retrospective cohort studies with sufficient follow-up of students to properly assess the clinical effectiveness of scoliosis screening.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 21851**

**RELIABILITY AND VALIDITY OF ADAPTED THAI VERSION OF SCOLIOSIS RESEARCH SOCIETY-22 (SRS-22) QUESTIONNAIRE**

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STUDY DESIGN: Cross-sectional study to determine the internal consistency and validity of adapted Thai version of Scoliosis Research Society-22 (SRS-22) instrument. OBJECTIVE: To evaluate the validity and reliability of adapted Thai Version of SRS-22 questionnaire. BACKGROUND DATA: The SRS-22 questionnaire is a widely accepted questionnaire to assess the health-related quality of life for scoliosis patients. However, its adaptation in Thai language is necessary for using with Thai patients. METHODS: translation/retranslation of the English version of the SRS-22 was done according to AAOS guideline. Later, SRS-22 questionnaires and validated SF-36v2 were mailed to patients who had been treated for idiopathic scoliosis with a minimum of a year follow-up. The internal consistency and reproducibility were determined by Cronbach statistics and intraclass correlation coefficient, respectively. Concurrent validity was measured by comparing with validated SF-36v2. The Pearson correlation coefficient was used. RESULTS: The study shows satisfactory internal consistency with high Cronbach  $\alpha$  values for all of the corresponding domains (pain, 0.72; self-image/appearance, 0.87; mental health, 0.83; satisfaction with management, 0.63; and function/activity, 0.83). The test/retest reproducibility was also excellent for all domains (pain, 0.72; self-image/appearance, 0.85; mental health, 0.82; satisfaction, 0.62; and function/activity, 0.81). For concurrent validity, excellent correlation was found in 2 domains, good in 6 domains, moderate in 5 domains and poor in 5 domains of the 18 relevant domains. CONCLUSION: The Thai version of the SRS-22 has satisfactory internal consistency, excellent reproducibility and acceptable validity.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 21897**

**A PRACTICAL CLASSIFICATION OF THE DISTAL RADIUS AND ULNA RADIOGRAPH FOR ASSESSING SKELETAL MATURITY**

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Accurate prediction of the pubertal growth spurt is critical to the management of adolescent idiopathic scoliosis (AIS). Menarche onset and Risser sign could not demonstrate peak growth accurately. The authors have noted that morphological changes in the distal radius and ulna parallel peak growth and the cessation of growth. This study aims to substantiate these observations by correlation with growth parameters. **METHOD:** Using a cohort of 145 females followed from age 10 to maturity with growth measurements and yearly hand radiographs, morphological changes in the distal radius were classified into 11 stages (R1-11) and ulna into 9 (U1-9). The radius and ulna classifications were correlated with bone age, standing height, sitting height and arm span. **RESULTS:** Peak growth velocity, significantly correlated with the stage R7, when the medial side of radial epiphysis form a cap covering the radial metaphysis, and U5, when distal ulna epiphysis has taken the shape of ulna head. These were equivalent to a chronologic age of 11.4 years +/- one year. Growth was complete at R10, when the junction of the radial epiphysis and metaphysis became a single sclerotic line. This was equivalent to a chronologic age of 15.6 +/- 1.3 years. **DISCUSSION:** The stages of R7, R10 and U5 are easily identifiable stages in the distal radius and ulna. They are easier to use than full bone age measurements, and can predict both peak growth and cessation of growth. These are simple and useful tools for spinal surgeons managing AIS.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 22015**

**DIAGNOSTICS AND TREATMENT OF INITIAL DEGREES OF CONGENITAL HIGH POSITION OF SCAPULA (CHPS)**

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Recognition of initial degrees of CHPS can cause some difficulties. Limitation of movements of brachium and hypotrophy of muscle in babies can happen after birth traumas of shoulder or nerve trunks. Asymmetry of scapulae can manifest in cases of pectoral scoliosis as well. For early detection of CHPS together with testing of functions of arms we use the symptom of non-typical hair growth (SNHG) like an eddy which in cases of CHPS is situated in the region of scapula on the side of pathology. SNHG is the indicator of dysplastic defects of skeleton development in particular scapula. For diagnostics of severe degrees of CHPS the use of SNHG is less important as the main symptoms of the disease are clearly seen. To prove the diagnosis we use optical computerassisted topography, roentgenography with additional contrast, EMG, ECG and ultrasonography. Children with initial degrees of CHPS are given: remedial gymnastics, swimming, massage, hydromassage, electrophoresis with lidasa on the interscapular region, electrostimulation of nerves and weak muscles of thoracic girdle, laserotherapy and magnetotherapy, application of paraffin. While a child grows cosmetic defects and contracture of shoulder joint can increase if there is no treatment. Early permanent conservative treatment leads to good functional and cosmetic results.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 22020**

**DIAGNOSTICS AND TREATMENT OF INITIAL STAGES OF DYSPLASTIC SCOLIOSIS**

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Scoliosis is one of the most frequent and developing orthopaedic diseases whose effective treatment is possible only with early diagnostics. During screening examination of children we use the symptom of non-typical hair growth (SNHG) like an eddy which happens in 30% of patients with scoliosis in projection of spine. Children with congenital scoliosis have this symptom above the vertebrae with disorders of formation, fusion or segmentation. Often there are no roentgenological alterations except scoliosis itself with top of deformation under SNHG, or we find asymmetry of vertebrae branches and ribs in projection of an eddy. These scolioses are called dysplastic. The difference between desplastic and congenital scoliosis is in the degree of dysplasia. In 2008 Russian Academy of Natural Science took connection between local dysplasia of skeleton and growth of hair on the back like an eddy (Kolchin symptom) as scientific discovery (Diploma № 363). Scoliosis isn't revealed in many younger children, having this sign. In process of the growth of babies frequency of scoliosis increases. Usually scoliosis manifests itself in children at the school age. Optical computerassisted topography, roentgenography, EMG, ECG, spirometry, MRI are carried out to the patients with SNHG and with scoliosis. Patients with initial stages of scoliosis get constant treatment: remedial and respiratory gymnastics, swimming, massage, magnetotherapy, electrostimulation of paravertebral muscles, paraffin, barotherapy, laserotherapy and wearing corsets. Forming groups of risks of scoliosis from children with SNHG allows to diagnostics prescoliosis and scoliosis onset to apply preventive measures and early effective treatment.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 22055**

**THE RADIOLOGICAL THREE-DIMENSIONAL METHODOLOGY OF SCOLIOTIC SPINE DEFORMITIES EXPRESSIVENESS ESTIMATION**

Darya TESAKOVA, Alexandre BELETSKY, Dmitry TESA KOV, Nataliya MICHASEVICH, Sergej MAKAREVICH  
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Techniques of radiological diagnosis of spine deformity in three planes were studied. Their analysis and clinical approbation on 442 patients with scoliosis at the age of 5-18 years were carried out. The methodical algorithm of a radiological three-dimensional estimation of spine deformity was devised. The frontal plane was estimated under the direct roentgenogram in a standing position. On it define according to the specified criteria anatomic type of deformity and angular value of curvature arches by technique J.R.Cobb by which classify corresponding severity level of deformation by V.D.Chaklin. In the given picture define also expressiveness of a bone maturity of pelvis by Risser sign. In sagittal plane estimate character of spine changes under the lateral roentgenogram where define a condition of spine sagittal balance by offered compensation criterion in three variants: compensated, subcompensated and decompensated. Also in the given picture define expressiveness of a bone maturity of vertebrae by V.I.Sadofeva. In the horizontal plane estimated on a direct picture, define size of rotation of vertebrae in curvature arches. For rotation measurement it is recommended to use technique P.Raimondi. The classification into four degrees of expressiveness of rotational deformity as criterion of an estimation was devised. Application of offered methodical algorithm allows to standardize the radiological estimation of expressiveness of spine deformity in three-dimensional space. It provides statement of the exact clinical diagnosis, definition of the program adequate corrective treatment and its effectiveness for the concrete patient.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 22078**

**RADIOLOGICAL INDICATORS OF SURGICAL SPINE DEFORMITIES MOBILITY AND CORRECTION**

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The aim of the work was to determine the roentgenological parameters of the surgical spine deformities mobility and correction which reflects pathological changes and surgical treatment results in three-dimensional space. 1192 spine roentgenograms (including preoperative, postoperative and functional X-ray pictures) of 149 patients with the idiopathic scoliosis on the surgery stage, who was surgically treated by Cotrel-Dubousset methodology with application of a titanic design 'BelCD' (Belarus) at the age of 15-18 years, were analyzed. The worked out methodical algorithm of the scoliotic spine deformity estimation in three-dimensional space and devised index-rates which reflects spine deformities mobility and correction in frontal plane were used. Comparison of the received measures allowed to determine that arch angular value in frontal plane is the most informative to estimate the gravity of the scoliotic lesion. On the fourth deformities stage this arch angular value is reasonable to divide into four intervals: from 41° to 60°, from 61° to 90°, from 91° to 120°, over 120°. Such division coordinates with physiological anatomy-biomechanical spine characteristics and also correlates with the revealed measures dynamics in sagittal and horizontal plane. The devised methodical algorithm of the scoliotic spine deformity estimation in three-dimensional space and index-rates which reflects spine deformities mobility and correction in frontal plane are proposed to be used in clinical practice. The revealed stepped dependence of the initial functional and surgical correction is reasonable to take into account as a prognostic criterion closed to selection and planning of the operation methodology.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 22102**

**EISENMENGGERS SYNDROME WITH SCOLIOSIS: CASE REPORT**

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**PURPOSE:** Case notes of a 12 years old patient diagnosed with Eisenmengers syndrome and scoliosis. Eisenmengers syndrome is a complication of uncorrected congenital heart anomalies that produce left-to-right shunting. Increased pulmonary resistance often develops over time, reversing left-to-right shunting to right-to-left shunting. Scoliosis is present in about 1/3 of patients. **MATERIALS & METHODS:** Diagnosis of the Eisenmengers syndrome was made using Standard cardiac techniques while spinal x-rays and spinal column MRIs were used to define the scoliosis. **RESULTS:** Congenital heart anomalies that, if untreated, result in Eisenmengers syndrome include ventricular septal defect, atrioventricular canal defect, atrial septal defect, persistent truncus arteriosus, and transposition of the great arteries. Cardiac catheterization was performed on the patient with adverse results. Surgery, either cardiac or spinal, is not advised. **CONCLUSION:** Occasionally, very rare cardiac syndromes are encountered. The patient has severe thoracolumbar scoliosis which, due to Eisenmengers syndrome, can not be operated upon. Thereby, scoliosis is being treated using a correct brace and close patient observation.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 22104**

**OBSERVATIONS OF SPINAL DEFORMITIES IN PATIENTS WITH SPINA BIFIDA**

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**PURPOSE:** The purpose of this study was to evaluate spinal deformities and physical function in children and adolescence with Spina Bifida. **MATERIALS AND METHODS:** Thirteen children and adolescences who had spina bifida with scoliosis/kyhposis were followed. Spinal deformities were measured using coronal cobb and lateral cobb methods, sagittal and coronal balance, pelvic and clavicular obliquity, and pulmonar function. Measures of physical function of the spine were evaluated with the Spina Bifida Spine Questionnaire. **RESULTS:** Eight patients were male and five were female, average age 5.6 years (6 months-19 years). Only one required surgery. This patient had developed sitting imbalance and needed posterior spinal fusion from the Thorasic two vertebra to the Sacral area. In all, thirteen patients were observed with or without spinal braces. All patients received physiotherapy. **CONCLUSION:** We recommend regularly following-up these patients for spinal and other problems. As these patients are young, spinal deformities of the Spina Bifida change over time due to growth. In Spina bifida patients it is very important to ensure sitting balance and to monitor for any changes in physical function.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 22110**

**AN ANALYSIS OF INTRAOPERATIVE BLOOD LOSS DURING DIFFERENT STAGES OF SCOLIOSIS SURGERY- A RANDOMIZED PROSPECTIVE STUDY IN 34 PATIENTS**

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**OBJECTIVES:** To identify pattern of blood loss intraoperatively in different groups and to discuss probable reasons for that. **METHODS:** We prospectively measured blood loss and operation time during four different stages of scoliosis surgery among adolescent idiopathic (group 1), spastic neuromuscular (group 2) and paralytic neuromuscular (group 3) scoliosis in 34 patients. Per-level blood loss and operation time of each stage was considered to compare them among three groups. **RESULTS:** Per-level operation time was similar during each stages of operation among all groups ( $p>0.05$ ); and blood loss during dissection and bone grafting stage were also similar ( $p>0.05$ ). However blood loss in screw insertion stage was significantly higher in group 2 and 3 than group 1; and, blood loss in correction stage was highest in group 3 followed by group 2 and 1. Preoperative pixel value of vertebral body indicated the least BMD in group 3 followed by group 2 and 1, while preoperative blood indices were similar in all groups. The difference in bleeding pattern in screw insertion and correction procedure attributed to poor bone quality in group 2 and 3. Group 3 had the poorest bone quality which creates gape in bone-screw interface during correction stage, which again led to more bleeding in that group. **CONCLUSION:** We feel that loosening of bone-screw purchase in the pedicle which depends upon the bone quality is one of the important factors causing different pattern of blood loss intraoperatively during scoliosis surgery.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 22117**

**PEDICLE-SCREW-ONLY CONSTRUCTS WITH LUMBAR OR PELVIC FIXATION FOR SPINAL STABILIZATION IN PATIENTS WITH DUCHENNE MUSCULAR DYSTROPHY**

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**OBJECTIVES:** We present a retrospective clinical study of 36 patients of Duchenne muscular dystrophy (DMD) treated for correction of scoliosis with pedicle-screw-only constructs with the objective to analyze our technique, correction and maintenance of spinal and pelvic deformity, spinal fusion, the complications we encountered and the adequacy of lumbar fixation. **METHODS:** 36 patients were followed up for an average period of 37.75 months (min 24 months). Pelvic fixation was performed only if the pelvic tilt was more than 15 degrees (10 patients). Cobb angle, thoracic kyphosis, lumbar lordosis and pelvic tilt were measured at each follow-up. Statistical Analysis was performed using paired t-test for for detection of differences. **RESULTS:** Cobb angle improved 65% ( $p<0.001$ ) after surgery from 71 degree to 25.5 degree. Balanced sitting posture was obtained in all patients. The lumbar lordosis improved significantly ( $p<0.0001$ ) from -21.4 degree to 23.7 degree and to 19.5 degree at final follow-up. In patients where pelvic fixation was performed pelvic tilt improved 62% ( $p<0.0001$ ) from 25.8 degree to 9 degree and to 11 degree at final follow-up. In patients where pelvic fixation was not performed, the pelvic obliquity also improved from 10.5degree to 5.8 degree (41.5% correction) and 8.5 degree at final follow up (4.2% correction). **CONCLUSION:** Pedicle screw only constructs provide good stability allowing better correction and maintenance of coronal and lumbar deformities, obtaining good sitting balance and mobilizing patients early after surgery.

**Poster**

**Session: Paediatrics - Spine**

**Abstract number: 22123**

**SURGICAL CORRECTION AND FUSION USING POSTERIOR-ONLY PEDICLE SCREW CONSTRUCT FOR NEUROPATHIC SCOLIOSIS IN PATIENTS WITH CEREBRAL PALSY - A THREE YEAR FOLLOW-UP STUDY**

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**OBJECTIVES:** To determine the effectiveness and amount of correction using posterior-only pedicle screw construct. **METHODS:** We retrospectively evaluated outcomes of 52 neuropathic scoliosis patients (28 male and 24 females) with cerebral palsy over minimum two years of follow-up. All patients underwent pedicle screw fixation without any anterior procedure for the correction. Pelvic fixation was done in ten patients who had pelvis obliquity more than 15 degree. All coronal and sagittal parameters were noted postoperatively and at final follow-up. Patients' functional outcome was measured using modified Rancho Los Amigos Hospital system criteria. **RESULTS:** Mean age was 22 years and average follow-up was 36.1 months. Cobbs angle was improved to 62.9% ( $p < 0.0001$ ) from 76.8 degree to 30.1 degree postoperatively and 31.5 degree at final follow-up ( $p < 0.0001$ ). Overall correction in pelvic obliquity was 56.2% from 9.2 degree preoperatively to 4.0 degree postoperatively which was 43.1% at final follow-up to 5.2 degree. 21 patients (42%) improved their functional ability by grade one with two patients by grade two. After the operation parent or caretakers of patients exhibited better sitting balance and nursing care. There were 32% complications in the series major being pulmonary. There were two perioperative deaths and one patient developed neurological deficit due to screw impingement in canal which was resolved after removal. **CONCLUSION:** We reported satisfactory coronal and sagittal correction with posterior-only pedicle screw fixation without higher complication rate in CP patients.

**Poster**

**Session: Paediatrics - Systemic**

**Abstract number: 20356**

**MULTICENTRIC TUBERCULOSIS OF TWO RARE SITES IN AN IMMUNOCOMPETENT CHILD**

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A 12 year old female, presenting as refractory coccydynia and sternal pain is presented. She was immunocompetent, and had no systemic features. She was diagnosed as tuberculosis of sternum and coccygeal regions based on Magnetic resonance imaging and histopathology of biopsy specimen. Conservative management with oral multidrug antituberculous therapy provided complete cure with no recurrence at 1 year follow up. Also, a multicentric presentation of tuberculosis of two rare sites in the same immunocompetent patient.

**Poster**

**Session: Paediatrics - Systemic**

**Abstract number: 21285**

**LONG-TERM OUTCOMES OF BONE AND JOINT INFECTION IN CHILDREN**

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**BACKGROUND:** Bone and joint infection in children brings about many sequelae such as disturbance of growth, pathological fractures and deformity. **OBJECTIVE:** To determine the long term results of bone and joint infection in children after accomplished the standard treatment. **MATERIALS AND METHODS:** A retrospective study was conducted between January 1998 and December 2008. All children aged under 15 years old who were diagnosed as septic arthritis or osteomyelitis were included. A standard protocol was followed as clinical presentation, laboratory investigations, antibiotic administration, limb immobilization, and rehabilitation. The outcomes of interests were functional outcome, complications such as growth arrest, limb length discrepancy. **RESULTS:** There were 33 patients included in the study. The average duration of symptoms was ranged from 1 day to 1 month. Eleven of 16 patients who had septic arthritis underwent arthrotomy with drainage. Thirteen of 14 patients who had osteomyelitis underwent debridement. The most common identified organism was *Staphylococcus aureus* that gave the rationale use of cloxacillin or cephazolin. Complications occurred in 15%, 5 cases (1 bony defect, 1 humeral fracture and limb shortening, 1 hip subluxation, 1 chondrolysis of the hip, 1 knee joint stiffness). **CONCLUSION:** Even though standard medical and surgical treatment is provided, pediatric bone and joint infections still have high complication rate, especially in a referral center that took care of delayed treatment cases.

**Poster**

**Session: Paediatrics - Systemic**

**Abstract number: 21884**

**BENIGN CARTILAGE TUMORS: OUR EXPERIENCE IN DIAGNOSTICS AND SURGICAL TREATMENT**

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Cartilage neoplasms are observed in 51.4% of children and adolescents with benign tumours and tumour-like lesions. In some cases, the initial histological manifestations of malignancy are revealed, but the clinical and X-ray symptoms of this condition are not studied in details. We have studied the details of clinical, X-ray and histological manifestations, and details of surgical procedures in 422 children and adolescents. Osteochondroma was revealed in 371 patients, chondroma - in 41, chondroblastoma - in 9 and chondromyxoid fibroma - in 1. The initial histological manifestations of malignant transformation were revealed in 72 cases: osteochondroma - 58, chondroma - 12, chondroblastoma - 2. We revealed that malignancy of benign cartilage tumours is probable in cases of its frequent traumatization, acceleration of its growth, appearance or strengthening of pain, synovitis of adjacent joint, increasing of slipshod and spotted roentgenological structure of the tumour and the onset of periostitis. We also revealed that the chondroid elements might disseminate to 1.5 cm from the visually determined boundaries of tumour. In all relapses (14), the level of bone cutting was at a distance less than 0.5 cm from the tumour. The excision of benign cartilage tumours must be carried out at a distance not less than 1.5-2 cm from the visually determined boundaries. The occurrence of even one of clinical or X-ray symptoms of possible malignancy requires the urgent surgical treatment.

**Poster**

**Session: Paediatrics - Systemic**

**Abstract number: 22001**

**RADIOLOGICAL EVALUATION OF ATYPICAL PRESENTATIONS AND DIFFICULT IMAGING SITES OF MUSCULOSKELETAL TUBERCULOSIS**

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**INTRODUCTION:** The atypical skeletal tuberculous lesions have a tendency towards multiplicity of lesions; an unusual distribution of lesions e.g. cervical spine, high dorsal spine and foot; involves rare sites e.g. ribs, vertebral appendages, pelvis, skull, shafts of bone; produce unusual reactions e.g. florid & sclerotic; associated with exceptionally large abscesses and lacks involvement of intervertebral disc in spinal lesion. Diagnosis of skeletal tuberculosis is a challenging; becomes more arduous when either the site is difficult to image or the presentation is atypical. The different radiological investigations were used in different combinations in our study. **MATERIALS AND METHODS:** Study was carried out in the Deptt. of Radiodiagnosis, INMAS, in association with Department of Orthopaedics, Lady Hardinge Medical College, New Delhi. **RESULTS (In brief):** Bone marrow edema & soft tissue abscess was present in all cases with osseous involvement. A third of spinal TB cases displayed sparing of disc. Two-third of spinal TB cases had epidural spread of abscess, which correlated with neurological deficit (in all cases). 20 % of cases showed evidence of external/internal fistulization. About 50% of the cases showed pyomyositis in 1-2 adjoining muscles groups. The only manifestation of Isolated soft tissue TB cases in our study was Tenosynovitis (2/35). Pannus & Rim enhancement was seen in all TB cases included. MRI was found to be the Modality of Choice for evaluating difficult imaging sites e.g. Cx - Dx Jn, Clivus, Sacrum Small bones. Early cases with only marrow involvement could only be picked up with MR.

**Poster**

**Session: Paediatrics - Systemic**

**Abstract number: 22165**

**TITLE: USING AN ACTIVE HYDROXYAPATITE OSTIM WITH AUTOGENOUS BONE GRAFTING IN BENIGN CYSTIC LESION OF BONE - AN EXPERIENCE OF 10 CASES**

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Various options are available to fill the currettaged cavity in benign cystic lesions of bone. We present our experience of active hydroxyapatite mixed with autogenous cancellous bone graft in 10 cases (5 Non ossifying fibroma, 3 aneursymal bone cyst, 2 Fibrous cortical defects). This nanoparticulate hydroxyapatite stimulates bone growth and has high degree of dispersion. Excellent results were found in form of replacement of hydroxyapatite by bone in a mean period of 3-6 months.

**Poster**

**Session: Paediatrics - Systemic**

**Abstract number: 22255**

**MULTIPLE EXOSTOSIS DISEASE: FINDING THE PATIENTS AT RISK**

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**INTRODUCTION:** The Multiple Exostosis Disease is characterized by the appearance of multiple projections called exostosis. They grow up, causing deformities, vessels or nerves damages, developing an early joint osteoarthritis and potentially changing into malignant tumours. Our hypothesis is that a clinical and genetically pattern of these skeletal dysplasia exists and will let us find the patients at risk and establish the bases of diagnose and follow-up. **MATERIAL AND METHODS:** We carried out an epidemiological study, prospective and retrospective, collecting all patients diagnosed with this illness since 1978 in our Department. The genetic mutations were identified to find the most common one and establish the proportion of the inheritance. The relationships between the identified mutation, symptoms and radiographies were analysed. Finally, those patients that developed complications and those who need surgery were particularly studied. **RESULTS:** The patients with sporadic inheritance in our study is lower (28.6 %) than in the bibliography (Legeait 38%). The age of diagnosis on our study (8.3 years) is higher than other studies (3.5years). We noted a higher malignancy rate (5.7%) compared to other studies (Voutsinas 0.5 % and Matsuno 1-4%), and involving particularly very young and male patients. **DISCUSSION AND CONCLUSION:** Our study demonstrates that this illness is influenced by the gender: boys are more frequently and intensely affected. With this study, we have tried to describe the epidemiological characteristics of this disease in our county, as well as lay the bases that allow an early identification and perform a better follow-up of the complications.

**Poster**

**Session: Paediatrics - Tibia/Fibula**

**Abstract number: 20629**

**CHRONIC RECURRENT MULTIFOCAL OSTEOMYELITIS (CRMO) AS AN INDIRECT CAUSE OF STRESS FRACTURE**

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AIM: We present an exceptionally rare CRMO in girl of good general fitness, and the possibility of making a wrong diagnosis, in two very different illnesses. MATERIALS / METHODS: A six-year old girl came limping with pain, swelling and redness in the left lower leg above the ankle joint, subfebrile, lab-moderate, radiograph showed two bone mass resorptions with sclerotic edges above lower epiphysis of the left tibia, MRI showed sclerotic osteomyelitis? We removed gruelly mass without pus in both seats. Bacteriological analysis and Ziehl-Neelsen stain were negative, pathohistological examination showed inflammation. Antibiotics were given and the child became afebrile. Papulous changes on forearm appeared. Gradual weight-bearing until the complete filling of bone mass in the area of extraction began. The child returned again with similar symptoms on proximal part of the other shin. Radiograph-negative, SE-26, CRP-1,1, L-8,4. Resting and antibiotics were ordered, 10th day bone-scan showed increased activity in tibia, 20th day a new radiography and CT confirmed stress fracture and not an inflammation. Antibiotics therapy-stopped, the symptoms withdrew. After a year the child returned complaining of pain in the area of the right heel, without injury, limping with a mild swelling and redness, afebrile (L-11, SE-24, CRP-2,0), without radiological-changes. Bone-scan showed activity in calcaneus, talus and sacroilical joint. Pathohistological-findings showed sclerozation and bacteria could no be isolated. We suspected CRMO, DNA was isolated, which confirmed the gene disorder PSTPIP2. RESULTS / CONCLUSION: Similarity of symptoms caused us to oversee stress fracture, which has yet not been described with CRMO.

**Poster**

**Session: Paediatrics - Tibia/Fibula**

**Abstract number: 20790**

**NEW HINGE SYSTEM IN THE TREATMENT OF LIMB LENGTHENING AND AXIAL DEVIATIONS**

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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 the leg. Since 1995 to 2008 this new system was used in 300 patients with different indications in the lower limbs they presented with leg length discrepancies and axial deviation. The External Fixation Hinge System /Salamehfix /; is an arch hinged system consists of arches with a various diameters and perimeters, to assemble the different sizes of the leg in the upper and distal part with connecting special hinges, different sizes of the 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, the insertion of the wires and screws in nearly right angles which make a rigid fixation, the insertion of wires and half pins in a minor painful regions makes the tolerance to the fixator is more acceptable. X-Ray control is easy. Complications were 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.

**Poster**

**Session: Paediatrics - Tibia/Fibula**

**Abstract number: 21032**

**NEOPLASTIC PRESENTATION OF HYDATID CYST: A CASE REPORT**

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Primary musculoskeletal hydatid disease is rare presentation. We report a case of osseous hydatid cyst with neoplastic presentation. CASE REPORT: An 18 year-old female presented with chief complaints of pain in Lt. upper leg since 2 yrs and difficulty in walking since 6 months. On examination there was tenderness present in upper part of Lt. leg on lateral aspect, hyperaesthesia on lateral aspect of leg, power at ankle & toes was 5/5, full range of motion was present at knee and ankle. X-ray left knee with leg AP/Lat - Gaping is seen in upper end of fibula with loss in cortical outline. MRI Lt Leg - Well defined cystic lesion with heterogenous areas in upper interosseous space of left leg with scalloping of adjacent fibular cortex. Differential diagnosis - neurogenic tumour. - soft tissue tumour. MANAGEMENT: Excision of upper end fibula with excision of flaky cystic mass with capsule after isolating it from neurovascular bundle in introsseous space. Biopsy- shows features of hydatid cyst .Sections from cystic structure show ectocyst composed of hyaline pink lamellated membrane. Sections from soft tissue show fibrocartilagenous tissue forming pericyst showing diffuse chronic inflammation and foreign body giant cell reaction Postoperative period remained uneventful. CONCLUSION: Hydatid cyst, though rare should be considered as a differential diagnosis for soft tissue cystic tumours and to prevent serious complications like anaphylaxis and recurrence.

**Poster**

**Session: Paediatrics - Tibia/Fibula**

**Abstract number: 22131**

**PHYSEAL INJURIES OF THE DISTAL TIBIA - LONG TERM RESULTS IN 376 PATIENTS**

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**OBJECTIVE:** The aim of this study is to evaluate our treatment methods of distal tibial physeal injuries retrospectively, and explain the relationship between the trauma mechanism, the radiographic injury pattern, the consecutive therapy and the functional outcome, further deduct and verify prognostic criteria. **MATERIALS AND METHODS:** At the Department of Trauma Surgery, Vienna Medical University, 419 children and adolescent patients with physeal injuries of the distal tibia were treated from 1993 to 2007, 376 were included into our study and evaluated retrospectively. **RESULTS:** 77 displaced physeal fractures of the distal tibia were reconstructed anatomically by open or closed reduction and produced 95 % excellent results. **CONCLUSION:** A perfect anatomic reduction, if necessary by open means, should be achieved to prevent a bone bridge with consecutive epiphysiodesis and posttraumatic deformities, due to growth inhibition and -retardation.

**Poster**

**Session: Sports Medicine - Ankle/Foot**

**Abstract number: 21025**

**TREATMENT OF RUPTURE OF THE ACHILLES TENDON WITH FIBRIN SEALANT**

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**BACKGROUND:** Surgical and nonsurgical treatments of Achilles tendon ruptures are available. The use of fibrin sealing for surgical therapy of ruptured Achilles tendons is an alternative technique. **METHODS:** Thirty-six patients who had rupture of the Achilles tendon were treated operatively with use of fibrin sealant, and clinical and functional performance measures were assessed after a mean follow-up of at least 6 months between November, 1998, and March, 2007. All of the patients were male. Average age was 38.18 (30 to 45) years. All of the patients were followed for at least 18 months after surgery. Average follow-up time was 22.6 (18 to 56) months. We evaluated all patients according to the scoring system of Thermann et al. **RESULTS:** Our results were excellent in 26, good in nine patients, fine in one and poor in one patient. One patient had rerupture 3 weeks after surgery. One patient had superficial infection and skin necrosis 1 week after surgery. **CONCLUSION:** Fibrin sealants are biologically compatible, hemostatic agents derived from human plasma that can be used instead of suture or suture support. We think that the treatment of rupture of the Achilles tendon with fibrin sealant is a useful treatment, and there is less risk of complications, such as deep infection, than in other operative procedures. The incision size was small, and the operating time was short. The functional and cosmetic results were satisfactory.

**Poster**

**Session: Sports Medicine - Ankle/Foot**

**Abstract number: 21519**

**ACCELERATED REHABILITATION AFTER RECONSTRUCTION OF THE CHRONIC ACHILLES TENDON RUPTURE**

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**INTRODUCTION:** In the patients with chronic Achilles tendon rupture, reconstruction of the Achilles tendon to a functional length is important in treatment. We hypothesized that simultaneous augmentation with a firm connection between the distal and proximal stumps after surgery can provide an accelerated rehabilitation and may be beneficial for the early recovery. **MATERIALS AND METHODS:** 16 patients were included with 9 males and 7 females. The mean age at the time of surgery was 48 years. All subjects underwent a turn-down procedure utilizing the medial and lateral flaps of the proximal Achilles tendon to bridge the gap. Furthermore, plantaris tendon or an autologous gracilis tendon was harvested to augment the repair. After 2 weeks cast immobilized at 20 degree plantar flexed position, accelerated rehabilitation with partial weight bearing and passive ROM exercise was performed. **RESULTS:** The mean AOFAS scale score was 69.8±3.2 points (range: 59 to 73 points) at pre-operation, and 97.5±4.4 points (range: 87 to 100 points) at the most recent follow-up ( $p<0.0001$ ). There was no complication such as infection, nerve injury, and the limitation of ROM of the affected ankle. All patients returned to the athletic activity. **CONCLUSION:** Utilizing gastrocnemius fascial flaps with simultaneous augmentation utilizing plantaris or gracilis tendon for the reconstruction of a neglected Achilles tendon rupture has the advantage that it provides a firm connection between the distal and proximal stumps to be possible to begin accelerated postoperative rehabilitation at an early stage.

**Poster**

**Session: Sports Medicine - Ankle/Foot**

**Abstract number: 22293**

**ANALYSIS OF FOOT PRESSURE IN PATIENTS WITH HALLUX VALGUS DURING STAIR ASCENDING AND DESCENDING**

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**OBJECTIVE:** The patients with hallux valgus (HV) always feel great uneven foot pressure during ambulation. Although there is some studies of HV plantar pressure analysis during gait, there is no study on these patients during stair climbing. The aim of this study was to investigate the dynamic plantar pressure distribution of HV during stair ascending and descending. **MATERIALS AND METHODS:** 12 females with HV were participated in the study. The plantar pressure was measured 5 time repetition during stairs by RS Foot Scan system and analyzed by Matlab. The foot of each subject was divided into 10 regions for analysis. Peak force, the instance when the peak force occurred, and time-force integral for stair ascending and descending were analyzed statistically using SPSS. **RESULTS AND DISCUSSION:** The averages of stance period during stair ascending and descending were 0.96 and 0.87 second. The peak forces under later heel during stair ascending were different from these during descending. The time when the peak forces occurred was also different between these two activities. All patients loaded their forefoot, especially for the 2nd-5th toes, less during up-stair and more during down-stair, while loaded their lateral heel more during stair ascending and less during stair descending. These results indicate that there was a tendency for an increase of pressure under the toes during downstairs and under the heel during upstairs walking. We conclude that the additional stress by walking upwards and downwards causes some changes of pressure distribution especially under the HV foot.

**Poster**

**Session: Sports Medicine - Elbow**

**Abstract number: 21050**

**MINI-OPEN MUSCLE RESECTION PROCEDURE FOR LATERAL AND MEDIAL EPICONDYLITIS**

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**PURPOSE:** This study was performed to evaluate the clinical result and the effect of surgical treatment using mini-open muscle resection procedure under local anaesthesia for intractable lateral or medial epicondylitis. **MATERIALS AND METHODS:** We managed 42 elbows (41 patients) surgically for lateral or medial epicondylitis. Our indication of surgical treatment was a refractory pain after six months conservative treatments, or a history of local injection of the steroid more than three times, or a severe functional impairment in occupational activities. Result of treatment was assessed in terms of the pain using visual analogue scale(VAS), Roles & Maudsley score, and Nirschl & Pettrone grade. **RESULTS:** Preoperative VAS scores of the pain were average 5.36 at rest, 6.44 at daily activities, 8.2 at sports or occupational activities. After operation VAS scores improved significantly ( $p < 0.01$ ): 0.3 at rest, 1.46 at daily activities, and 2.21 at sports or occupational activities. Preoperative Roles & Maudsley score was acceptable in 6 cases, poor in 36 cases, which was changed to excellent in 23 cases, good in 16 cases, acceptable in 3 cases after operation. According to the grading system by Nirschl & Pettrone, 23 cases were excellent, 18 cases were good, and remaining 1 case was fair. Therefore, 41 cases (97.6%) achieved satisfactory results. **CONCLUSION:** Our mini-open muscle resection procedure under local anaesthesia seems to be one of effective methods for intractable lateral or medial epicondylitis.

**Poster**

**Session: Sports Medicine - Elbow**

**Abstract number: 21053**

**INCOMPLETE COMPRESSIVE NEUROPATHY OF POSTERIOR INTEROSSEOUS NERVE CAUSED BY GANGLION-MISDIAGNOSED AS THE RUPTURE OF COMMON EXTENSOR MUSCLE**

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Ganglion is a common benign tumour-like mass and is likely to cause paralysis of posterior interosseous nerve by compression once occurred in proximal radial area. A 25-year old female patient, who was suffering from forearm pain and trouble with extending her fingers except thumb after intramuscular stimulation therapy, visited our hospital. We diagnosed as the common extensor muscle rupture by physical examination. But, on the basis of preoperative MRI, she was diagnosed with incomplete posterior interosseous nerve paralysis caused by ganglion of the proximal radius. We performed the surgical excision and obtained a satisfactory result without any evidence of recurrence at the 1 year follow-up after surgery. Incomplete compressive neuropathy of posterior interosseous nerve sometimes confused with spontaneous rupture of the common extensor muscle, which can lead to inappropriate surgical treatment. Careful preoperative examination is essential to avoid misdiagnosis. We report this case with review of the relevant literature, because of rarity of incomplete compressive neuropathy of posterior interosseous nerve by ganglion.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 20660**

**LONG TERM RESULTS OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: A COMPARISON WITH NON-OPERATIVE TREATMENT WITH A FOLLOW-UP OF 15 TO 20 YEARS**

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In a non-randomised study we have compared anterior cruciate ligament (ACL) reconstruction using bone-patellar tendon-bone (BTB) graft with a non-operatively treated group of patients 15-20 years later. Ninety-six patients with arthroscopically proved ACL rupture were treated between 1985 and 1990. 39 patients who had severe symptoms of giving way were submitted to the ACL reconstruction 3-24 (mean 19) months later (group one). Second group of 23 patients, continued with non-operative treatment (group two). HSS and IKDC subjective and objective evaluation forms were used to assess the knee stability. Radiographic assessment was performed using IKDC grading scale. Follow-up results show that 82% of operated patients had stable knees and normal or nearly normal IKDC grade. In the group two, not one patient could keep high level of activities. The majority of 74 % gave up recreative sports. Subjective IKDC score was significantly in favour of operated group of patients: 45.2 in group one compared to 15.0 in group two. Osteoarthritis rate in group one showed 20% of normal knees, 41% mild degenerative changes, 5% grade two OA and in 26% we found severe changes, the result that we did not expect. In group two there were no normal knees, but 33% of mild OA, 37% grade two and 30% of severe degenerative changes. Although we have compared small groups, proprioception capacity of injured knees in both groups showed similar results, meaning that non-operative patients developed good neuromuscular control in injured knees.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 20924**

**EFFECT OF TUNNEL POSITION FOR ANATOMIC SINGLE-BUNDLE ACL RECONSTRUCTION ON KNEE BIOMECHANICS IN A PORCINE MODEL**

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**PURPOSE:** The purpose of this study is to compare different tunnel positions for single-bundle reconstruction (SB). **METHODS:** Ten porcine knees were used for the following reconstructions techniques: three different anatomic SB (AM-AM, PL-PL, and MID-MID) (n=5 for each group), conventional SB (PL-highAM) (n=5) and anatomic double-bundle (DB) (n=5). Using a robotic/universal force-moment sensor testing system, an 89N anterior load (KT) at 30°, 60° and 90° of knee flexion and a combined internal rotation (4Nm) and valgus (7Nm) moment (Pivot) at 30° and 60° were applied. Anterior tibial translation (ATT) (mm) and in-situ-forces (N) of reconstructed grafts were calculated. **RESULTS:** During KT at 60°, PL-PL had significantly lower in-situ-force than intact ACL ( $p < 0.01$ ). In-situ-force of MID-MID was higher than other SB reconstructions. At 30° and 60°, PL-highAM had the lowest in-situ-force. MID-MID and DB had no significant in-situ-forces differences at 60° and 90°. During pivot at 60° of knee flexion, PL-highAM reconstruction had a significant lower in-situ-force than intact ACL ( $p < 0.01$ ); while MID-MID had the highest in-situ-force. During KT at 30° and 60°, there was a significant difference of ATT between intact knee and PL-high AM ( $p < 0.01$ ). During KT at 60° and 90°, MID-MID, AM-AM, and DB had significantly lower ATT than ACL deficient knee ( $p < 0.01$ ). During KT at 90°, PL-PL and PL-high AM had significantly higher ATT than intact knee ( $p < 0.01$ ). **CONCLUSIONS:** MID-MID provided better stability among all anatomic SB reconstructions and more closely restored normal knee kinematics.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21075**

**RESIDUAL LAXITY AND FUNCTION OF THE KNEE AFTER SCREW FIXATION OF THE ISOLATED PCL AVULSION FROM THE TIBIAL ATTACHMENT**

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**BACKGROUND:** Open reduction and internal fixation is the treatment of choice of the PCL avulsion fracture. We observed that after reattachment of the PCL avulsion, there were some degrees of residual posterior laxity on physical examination. **OBJECTIVE:** To identify the posterior laxity of the knee after PCL fixation and to correlate the findings with the functional outcomes using the standard evaluation systems. **MATERIAL AND METHODS:** Retrospective study of 13 isolated PCL avulsion from tibial attachment treated at Lerdsin General Hospital from January 1997 to April 2002 was performed. The operation was done within 16 days after injury. All the PCL avulsions were fixed with screw without recession of the fragment. Anatomical reduction of the avulsion fragment was done under direct vision and was confirmed by radiography. The follow up evaluation included arthrometric measurement of the posterior translation of the knee using KT 1000 arthrometer. Functional outcomes were assessed using the IKDC evaluation form and the Lysholm score. The evaluation was done at an average of 32 months after the indexed surgery. **RESULTS:** Mild posterior translation average 2.5 mm in the treated knee was observed. According to IKDC system, three knees were graded normal and 10 knees were graded nearly normal. The average Lysholm score was 90.9. **Clinical relevances and conclusion:** Despite mild laxity in the injured knee, the functional outcomes after fixation of the PCL avulsion were good to excellent. The recession of the avulsed fragment was not necessary additional procedure for treatment of the isolated PCL avulsion.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21214**

**MEDIAL PATELLOFEMORAL LIGAMENT REPAIR FOR POST-TRAUMATIC DISLOCATION OF PATELLA - OUR EXPERIENCE**

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INTRODUCTION: Medial patello femoral ligament (MPFL) is the main restraint to the lateral displacement of patella. It contributes to 50%-80% of the restraining force. 94% of patients with patellar dislocation suffer MPFL tear. AIM: To evaluate the effect of repair of MPFL in primary post-traumatic patellar dislocation. MATERIALS AND METHODS: We had a total of 20 patients with post-traumatic patellar dislocation. On examination after reduction or at a later stage, all of them had positive apprehension test. Radiographs were taken to rule out any anatomical abnormality. Closed reduction of dislocation was done in all patients under sedation. Once fit for surgery, they underwent MPFL repair. They were on cast for 3 weeks. At 3 weeks physiotherapy was started. At 6 months Kujala' score was assessed. RESULTS: Out of 20 patients, 11 were males and 9 females. Mean age was 28 years. All sustained dislocation following injury and closed reduction was successful in all. Surgical repair of was done at an average period of 4 weeks from dislocation. At an average follow-up of 13.6 months, apprehension test was negative in all and knee flexion was between 110 and 130. Mean Kujala score was 96 at 13.6 months follow-up. CONCLUSION: We had excellent results with MPFL repair for primary post- traumatic dislocation of patella in our hospital. It is important to select the right patients for this type of surgery as patients with recurrent or habitual dislocation or those with underlying anatomical abnormality may not do well following MPFL repair.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21230**

**TIBIAL FIXATION OF HAMSTRING TENDON WITHOUT HARDWARE FOR ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION - A NEW TECHNIQUE**

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**BACKGROUND:** Many fixation devices are used for anterior cruciate ligament reconstruction with hamstring tendon grafts. These devices increase costs especially in developed countries, and can be associated with a wide variety of problems. Therefore a new technique that requires no hardware has been introduced. **METHODS:** Between June 2004, and December 2006, seventy three patients with anterior cruciate ligaments (ACL) injuries were managed with a four bundle hamstring (semitendinosus-gracilis) tendon graft. A new technique is presented using trans-osseous graft passage followed by tying the graft to itself over a bone bridge. The mean follow up period was 33.8 months (range: 24-55). Results were evaluated by means of clinical examination, the International Knee Documentation Committee and Lysholm scores, KT-1000 arthrometer testing, and radiological evaluation. **RESULTS:** According to the International Knee Documentation Committee score, 65 patients (89%) had good score (23 normal and 42 nearly normal) results; whereas 8 patients had abnormal overall results. The mean side to side difference in anterior tibial translation on testing with the KT-1000 arthrometer was 1.9 +/- 1.5 mm. The mean Lysholm score was 89 +/- 9.5 points. **CONCLUSION:** The technique (tying the graft to itself over a bone bridge) provides a simple, safe, successful, and costless alternative tibial graft fixation without hardware in ACL reconstruction. **Keywords:** ACL reconstruction, tibial fixation, without hardware.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21289**

**POSTERIOR TIBIAL SLOPE: IS IT A RISK FACTOR FOR ACL INJURIES?**

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**INTRODUCTION:** Anthropometric factors may influence mechanical and functional stability of joints. An increased posterior tibial slope places the ACL at a theoretical biomechanical disadvantage. The purpose of this study is to investigate the relationship between posterior tibial slope and anterior cruciate ligament injuries. **METHODS:** Posterior tibial slope in 261 patients (190 males, 71 females) aged 16-53 who underwent anterior cruciate ligament reconstruction was measured using the posterior tibial cortex as reference. A matched control group was used for comparison. **RESULTS:** The average posterior tibial slope in the ACLR population was 5.6 degrees while the control group had average values of 5.8 degrees. This finding did not reach statistical significance ( $p=0.49$ ). In the male population average values were 5.3 degrees in the ACLR group and 5.9 in the control group. This was not significant ( $p=0.5$ ). However there was a significant difference ( $p=0.006$ ) in the female group. ACLR females had higher values 6.6 degrees whereas the control group had average values of 5.0 degrees. **DISCUSSION:** We could not confirm the results of previous studies demonstrating an increased degree of posterior tibial slope in ACL injured patients. However we demonstrated a significant difference in tibial slope in females. Based on our results an increased posterior tibial slope is not a risk factor in males but possibly contributes to ACL injuries in females. Increased posterior tibial slope may be one of the reasons why females have a higher incidence of ACL injuries.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21292**

**THE LEARNING CURVE IN TUNNEL PLACEMENT IN ACL RECONSTRUCTION**

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**INTRODUCTION:** Extensive previous research has shown that tunnel placement is critical in ACL reconstruction. The ultimate position determines knee kinematics and overall function of the knee post surgery. As with all techniques there is a definite learning curve for the arthroscopic technique. The purpose of this project therefore is to investigate the effect of the learning curve on tunnel placement. **METHODS:** Postoperative radiographs of the first 200 anterior cruciate reconstructions with BTP graft of a single orthopaedic surgeon performed during the first 4 years of independent practice were analysed. Xrays were digitalised and imported into a CAD program. Tunnel placement both femoral and tibial antero-posterior and sagittal was assessed using Sommers criteria. A rating scale was developed to assess overall placement. **RESULTS:** Tunnel placement scores improved from 66 for the first 25 procedures to 87 for the last 25 procedures. Sagittal femoral placement (zone 1-4 with zone 1 preferred zone) improved from an average of 1.44 to 1.08. Sagittal tibial placement did not change significantly and remained between 42.82 to 44.76%. Coronal femoral placement ranged from 10.45-11.15 and 12:45-1:15 o'clock respectively. Coronal tibial placement (45% from medial tibial border) ranged from 45-46.58%. **DISCUSSION:** Correct placement of the femoral and tibial bone tunnels is important for a successful reconstruction of the anterior cruciate ligament (ACL). This study demonstrated a definitive learning curve and steady improvement of tunnel placement. Whilst there was no significant improvement in sagittal placement overall placement improved significantly.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21365**

**THE SLOPE OF ACL BUNDLES FOR ACCURATE TRANSTIBIAL ANATOMIC RECONSTRUCTION: A CADAVERIC STUDY**

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Several studies showed that femoral tunnel placement During Double bundle ACL reconstruction through the anteromedial portal is more accurate compared to the transtibial technique. Our hypothesis is that for proper transtibial placement of the femoral tunnels, not only the anatomical site of the tibial tunnels is important but also the slope of the tibial tunnels should match the native slope of corresponding bundle as well. In this work the slope of the anteromedial (AM) and posterolateral (PL) bundles of the ACL in the coronal and sagittal planes in relation to the tibial plateau were studied. We examined 8 cadaveric knees of middle aged adults. The angle between each bundle and the tibial plateau was measured. It was found that the mean slope in the sagittal plane is 72° & 104° for the AM & PL bundles respectively with the knee flexed to 90° degrees and the mean slope in the coronal plane is 84° & 87° for the AM & PL bundles respectively with the knee flexed to 90° degrees. This is the first time that these slope angles have been studied, and it serves as a nucleus for determining the drilling angles in double bundle ACL reconstruction.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21490**

**ARTHROSCOPIC ACL RECONSTRUCTION USING BONE PATELLAR TENDON BONE AUTOGRAFT VERSUS QUADRUPLE HAMSTRING TENDON GRAFT**

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Deficiency of the anterior cruciate ligament (ACL) is a common disorder which often markedly reduces athletic activity and the quality of life. Injury to the anterior cruciate ligament may lead to functional instability, meniscal injury, and premature degenerative changes of the knee. In our study we made a retrospective and prospective analysis of 50 patients treated by arthroscopically assisted ACL reconstruction, from jan 2004 to jan 2007. ACL reconstructions using autogenous bone patellar tendon bone graft (BTB) was done in 25 patients and hamstring tendon graft was used in 25 patients. The fixation methods used were endobutton, interference screws, transfix system and when needed suture posts were added. Sports activities led to 80% of the injuries, with soccer and kabaddi representing 70% of injuries. The outcomes were evaluated by Physical examinations which included the Lachman test, anterior drawer, pivot shift, and anterior subluxation tests. All the patients were functionally evaluated based on IKDC score. Normal or near-normal function of the knee was reported in 92% of patients in both groups. There was clinically no significant differences found between the two groups in quadriceps atrophy, lachmans test, anterior drawer test and pivot shift tests, functional outcome was almost found to be equal in both the groups. The hamstring group had given a cosmetically better scar compared to BTB group but we encountered slightly higher complication rate and longer rehabilitation period with the hamstring group.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21765**

**CORRELATION BETWEEN SYNOVIAL FLUID AND SERUM IL-1 $\beta$  LEVELS**

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Possibility of controlling harmful intraarticular influence of elevated IL-1 $\beta$  synovial fluid concentration after ACL surgery could be useful. We have investigated correlation between serum and synovial fluid IL-1 $\beta$  levels following ACL-reconstruction. We measured IL-1 $\beta$  concentration periodically in 3 synovial fluid and 4 serum samples in each of 20 patients receiving either Autologous Conditioned Serum (ACS) containing endogenous anti-inflammatory cytokines including IL-1Ra and several growth factors (Group A) or Placebo (Group B). IL-1 $\beta$  synovial fluid concentration decrease appeared more pronounced in absolute terms in Group A. In 8 patients serum IL-1 $\beta$  were detected on 6th postoperative day. In 4 of them whose synovial fluid levels were over 10 pg/ml on 6th postoperative day, serum IL-1 $\beta$  were detected on 10th postoperative day. Results were different in Group B. Correlation between serum and synovial fluid IL-1 $\beta$  appearance persists in patients after ACL surgery and ACS application. Present study is as an example of ACS influence on the ACL healing process controlling the IL-1 $\beta$  levels on the basis of the serum IL-1 $\beta$  detection.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21820**

**CARTILAGE INJURY OF KNEE: A DESCRIPTIVE STUDY**

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**INTRODUCTION:** Cartilage damage is quite frequent with knee injuries. They may be associated with or with cruciate ligament injury or meniscal injury. It is more frequent in younger population. Curl et al reported over 63% cartilage injury in a retrospective study on 31,516 knee arthroscopies. Objective of this study is to find out the association of cartilage injury with intact or damaged anterior cruciate ligament. **MATERIAL AND METHOD:** Data of 544 patients was collected from standardized arthroscopy registry from January 2003 to December 2006. These patients underwent arthroscopy due to twisting injury to knee. Data was systematically entered and analyzed using SPSS 13. **RESULT:** Mean age of patients was 32.45+ 10.88. Overall incidence of cartilage injury was 32.16%. Most common cartilage to sustain damage was of medial femoral condyle (16.7%) followed by medial tibial condyle (12.5%), lateral tibial condyle (9.4%) and lateral femoral condyle (8.8%). There was no significant association between cartilage injury and status of anterior cruciate ligament. **CONCLUSION:** cartilage injuries are more common in young patients. Medial femoral cartilage is most commonly involved. Contrary to popular belief, there is no significant association between injury to cartilage and damaged anterior cruciate ligament.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21823**

**STUDY THE PATTERN OF MENISCAL INJURIES IN ANTERIOR CRUCIATE LIGAMENT DEFICIENT KNEE**

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**INTRODUCTION:** Meniscal injuries commonly occur in conjunction with ACL tears. Studies reported the occurrence of these injuries, to the extent of 16% to 82% in knees with acute ligament tears and 96% in knees with chronic ligament tears. Lateral meniscal tears occur slightly more frequently than medial tears in knees with acute ACL injuries, however in chronic ACL deficiency, medial meniscal tears are more common. **MATERIAL & METHOD:** We evaluated 128 patients with ACL deficient knees between April 2006 and May 2008. We studied the location and type of meniscal tears that occurred in ACL-deficient knees. Medial or lateral meniscal tears were classified according to radial & circumferential location. The different tear locations were then compared for the Medial and Lateral menisci and evaluated for statistical significance. **RESULT:** We found nearly equal number of tears on the medial (59) and lateral (53) and 16 were involving both medial and lateral menisci. A significantly greater number of tears on both the sides were involving posterior horn and peripheral zone. Peripheral posterior horn tears of medial meniscus were the common type of tear (40 of 128, 36%) being statistically significant. **DISCUSSION:** There has been a large amount of research into the function and injury of the medial meniscus in the ACL-deficient knee. Our data demonstrate that more than 75% of medial meniscal tears in the ACL deficient knee occur in the peripheral posterior horn. Medial meniscus, being the bumper to prevent anterior translation of ACL deficient knee, needs to be addressed.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21899**

**SEMITENDINOSUS REGROWTH TO ANATOMICAL TIBIAL INSERTION IN RABBIT**

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**BACKGROUND:** It has been reported that the semitendinosus (ST) tendon regenerates after harvesting, but its distal end reattaches more proximal to the anatomical insertion. In this study, we have grossly conducted an evaluation using animal model as to whether it would be possible to steadily induce regenerated tendon to the anatomical insertion by using autogenous soft tissue as scaffold. **MATERIALS AND METHODS:** Using Japanese white rabbits, ST tendons were harvested from both knees using tendon stripper. In the right knee, fascia lata was harvested from the same side as that of scaffold in order to induce regenerated tendon, and after the scaffold was transplanted so that it would be consistent with the canal of the normal ST tendon. For the left knee, the tendon was harvested as control. Three rabbits each were sacrificed at 1 and 2 months after the surgery in order to grossly evaluate the presence of regenerated tendon and reinsertion site. **RESULTS:** In the left knees, regenerated tendon-like tissues were observed in 5 of the 6 knees, however, in 2 knees, the regenerated tendon-like tissues ended at the muscle belly of the semimembranosus and did not insert to the tibia. In the right knees, more organized regenerated tendon-like tissues were observed along the scaffolds in all of specimens, and they inserted to the anatomical insertion. **CONCLUSION:** The results of this study indicated that it was possible to steadily induce the regenerated ST tendon to the normal anatomical site using a scaffold.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 21948**

**MENISCUS REGENERATION BY A TENDON AUTOGRAFT WITH RECOMBINANT HUMAN BONE MORPHOGENETIC PROTEIN-2**

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Composition of the meniscus is mainly type I collagen, but in the central area of the inner, nonvascularized region of the meniscus, type II collagen is synthesized. Recombinant human bone morphogenetic protein-2 (rhBMP-2) is an important factor that induces chondrogenesis and osteogenesis in vitro. Previously, we presented a new technique using rhBMP-2 injection to a tendon, and showed that rhBMP-2 induced chondrogenesis before the endochondral ossification in the tendon. We hypothesized that rhBMP-2 injection to a tendon grafted within knee joint would induce chondrogenesis without osteogenesis under the intra-articular condition. In the present study, we attempted meniscus regeneration by a tendon autograft injected by rhBMP-2. A healthy, adult female New Zealand White rabbit was anesthetized, and its medial meniscus was resected and replaced by the tendon of the semitendinosus. One rhBMP-2  $\mu\text{g}$  /10  $\mu\text{l}$  neutral buffer was injected with a micro-syringe into peripheral half of the grafted tendon. For the control group, an animal was treated in the same fashion but only buffer solution (10 $\mu\text{L}$ ) was injected into the tendon. Five animals were sacrificed at 4 and 8 weeks after surgery, respectively. Histologically, metachromasia by toluidine blue staining and type II collagen on immunohistochemistry appeared in the inner zone of the reconstructed meniscus at 4 and 8 weeks in the experimental group. But, it was not detected in control group. We demonstrated that it is possible to induce chondrogenesis within a tendon graft by rhBMP-2 injection under the intra-articular milieu, and to regenerate a meniscus with using rhBMP-2.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 22008**

**THE ROLE OF ARTHROSCOPY OF THE KNEE IN SPORTS INJURIES - 24 YEARS EXPERIENCES**

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**INTRODUCTION:** The arthroscopy gives great advantage to diagnosis and therapy of the sports injuries of the knee. **MATERIAL AND METHOD:** The authors performed 1868 arthroscopies at the same number of patients with sports injuries of the knee, through the period of 24 years (1985-2009). The average age was 26,4 years. The injuries were divided in two large groups: acute and chronic injuries. The first group of acute injuries was 928. The arthroscopic diagnosis was compared with the clinical and MRI investigations. **CONCLUSION:** The arthroscopy is a practical and appreciated procedure with minimum morbidity and complications. This procedure minimizes the treatment, making conditions for quick and effective rehabilitation.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 22381**

**ANATOMICAL STUDY OF BONY LANDMARKS OF THE ANTERIOR CRUCIATE LIGAMENT FEMORAL AND TIBIAL FOOTPRINTS**

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**BACKGROUND:** Anatomical double-bundle anterior cruciate ligament reconstruction is the current trend. Precise tunnel placement on femur and tibia is critical to the success of surgery. However, there is a high variation of anterior cruciate ligament attachments both in location and dimension. **HYPOTHESIS:** A consistent anatomical bony landmarks of anterior cruciate ligament should be used during reconstructive procedure. **STUDY DESIGN:** Descriptive laboratory study. **METHODS:** The morphology of the femoral and tibial anterior cruciate footprint was studied in 35 human femoral and tibial skeletally mature donors. A specific attention was paid on the boundary of the footprint with relation to other constant bony landmark. An appropriate size of tunnel for double bundle technique was determined to cover the maximal area of the footprint. **RESULTS:** On the femoral ACL footprint, the lateral intercondylar ridge was present as the anterior border, the proximal border was 1-2 mm. anterior to the posterior outlet of intercondylar notch, the posterior border was 2 mm above an articular surface along the curve of femoral condyle, and the inferior border was 2 mm superior to the articular surface. On the tibial ACL footprint, the medial border was the ridge at the lateral border of the medial tibial condyle, the posterior border was a ridge between the medial and lateral intercondylar tubercles, the anterior border was Parsons knob, and the lateral border was a bony ridge 1-2 mm medial to lateral tibial condyle. **CLINICAL RELEVANCE:** Consistent bony landmarks can be used in a precise tunnel placement.

**Poster**

**Session: Sports Medicine - Knee**

**Abstract number: 22400**

**SUPERIOR POLE SLEEVE FRACTURE POST PATELLAR STABILISATION**

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Sleeve fractures of the superior pole of the patella are rare. The importance of their diagnosis lies in the fact that the avulsed fragment contains a source of bone forming tissue which may lead to duplication or enlargement of the patella. We report a case in a 16 year old boy who underwent plication of the medial patellofemoral ligament, vastus medialis obliquus advancement and percutaneous lateral release, for recurrent instability. Interruption of the blood supply with subsequent avascular necrosis is one possible mechanism for this complication. Another possible mechanism is that of failure of the repair and re-dislocation, which may have been contributed to by a period of cast immobilization.

**Poster**

**Session: Sports Medicine - Shoulder**

**Abstract number: 20388**

**ISOLATED SUBSCAPULARIS TEAR IN 12-YEAR-OLD ADOLESCENT PLAYER: A CASE REPORT**

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Rotator cuff injuries commonly occur in middle aged and elderly patients and only less than 1% Rotator cuff tear occur in patient younger than 20 years. The mechanism of injury is mostly traumatic in nature. A 12-year-old adolescent right hand dominant athlete was evaluated and treated for right shoulder rotator cuff injury isolated to the subscapularis tendon without injury to either of tuberosities as reported here. Although most reported cases of subscapularis tendon injury are associated with supraspinatus tear or lesser tuberosity fractures. Right shoulder arthroscopic debridement with complete subscapularis tendon repair of 2cm x 2 cm performed. After six months of rehabilitation, physical examination demonstrated excellent range of motion. Posterosuperior labral signs were negative. There was no pain in the apprehension position. Throwers Ten program started afterwards and patient allowed to do all activities. The patient remained asymptomatic till date.

**Poster**

**Session: Sports Medicine - Shoulder**

**Abstract number: 20934**

**AUTOGENOUS SEMITENDINOSIS HAMSTRING GRAFT FOR ACROMIOCLAVICULAR JOINT CAPSULAR RECONSTRUCTION IN HIGH GRADE ACROMIOCLAVICULAR JOINT DISLOCATIONS**

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Type V and severe acromioclavicular joint (ACJ) dislocations can be severely disabling and recalcitrant to treatment secondary to instability of the distal clavicle. In these cases, instability manifests in both superior-inferior and anterior-posterior directions. We report here the results using a novel technique for ACJ capsular reconstruction with an autogenous hamstring graft. Ten consecutive patients with symptomatic Type V ACJ dislocations underwent surgical reconstruction using the same technique. Mean age was 45 years. All suffered traumatic injuries. All demonstrated symptomatic posterior translation of the distal clavicle relative to the acromion. All patients underwent surgical treatment using the same four-point technique: (1) distal clavicle excision; (2) intramedullary clavicular transfer of the coracoacromial ligament (modified Weaver-Dunn technique); (3) coracoclavicular reconstruction using absorbable suture braid and ipsilateral semitendinosis graft through drill hole in the clavicle and figure 8 around coracoid (modified Hawkins-Warren technique); and (4) ACJ superior capsular reconstruction with remaining semitendinosis graft fixed with transosseous sutures to acromion and posterior clavicle. All patients returned to their pre-injury level of function.

**Poster**

**Session: Sports Medicine - Shoulder**

**Abstract number: 21228**

**2 CASES OF THE CLAVICLE FRACTURES CAUSED BY NECK BRACE FOR PROFESSIONAL MOTOCROSS RIDERS**

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The motocross was known the extreme sports. They have a many chances of trauma. The motocross rider wear the many kind protectors for prevent their trauma. In recently Leatt Brace was developed which was protect for spine injury. This brace has thought good effects for prevent neck injury and AMA(American motorcycle association) recommended to wear the Leatt Brace riding the motor bike. We had 2 cases clavicle fracture of motocross professional riders who had wearing the Leatt Brace. The both fractures had same type fractures. We analyzed the courses of fractures by X-ray. The Leatt Brace was stable on the shoulder when was flexion and extension of the neck. But it was not unstable of the side bending, we found to touch the flame on the clavicle bone when they fully side bending in a fall down. Clavicle fractures have features, which are lateral side, and has triangle 3ed fracture below. The Leatt brace was possible to cause of this type fractures. It needs to improvement stable on shoulder side bending of the neck. We recommend to wearing the Leatt brace with shoulder or chest protector or body protector, which will work more stable the Liatt brace on shoulder.

**Poster**

**Session: Sports Medicine - Shoulder**

**Abstract number: 21549**

**COMPARATIVE EVALUATION OF OPEN VERSUS ARTHROSCOPIC SURGERY FOR ANTERIOR TRAUMATIC INSTABILITY OF THE SHOULDER**

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The purpose of this current retrospective study was to compare the clinical outcomes of open versus arthroscopic stabilization for anterior instability of the shoulder. All patients had traumatic anterior instability with Bankart lesions, which were repaired by the suture anchors. Open repairs were performed in fifteen consecutive shoulders, and arthroscopic stabilization, in thirty five shoulders. UCLA and modified Rowe scoring systems were used for evaluation of the clinical results. The follow-up evaluation was performed an average of 4 years 8 months (range, 1 year 5 months to 9 years 2 months) in open stabilization group, and 5 years 8 months (range, 2 years 9 months to 7 years 11 months) in arthroscopic stabilization group. At the final follow-up, there were no recurrent dislocations in open group. But two patients (5.7%) had instability three weeks after the operation due to a reinjury and due to recurrent epileptic episode in arthroscopic group. Perioperative morbidity was decreased and external rotation was improved in the arthroscopic stabilization group compared to open stabilization group. The average UCLA and modified Rowe scores for the arthroscopic stabilization group were higher than those of the open stabilization group, but these differences were not statistically significant. In conclusion, both techniques considered being the reasonable treatment methods for anterior traumatic instability of the shoulder, and arthroscopic anterior shoulder stabilization using the suture anchor was very effective in a group of young, active and selected patients. Keywords: Shoulder, Instability, Bankart lesion repair, Open, Arthroscopy, Suture anchor

**Poster**

**Session: Sports Medicine - Shoulder**

**Abstract number: 21554**

**ARTHROSCOPIC EN BLOC RESECTION OF THE DISTAL CLAVICLE IN THE ACROMIOCLAVICULAR JOINT LESION**

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**PURPOSE:** To describe technique of the arthroscopic en bloc resection of the distal clavicle and to evaluate the clinical outcomes after the operation in the acromioclavicular (AC) joint lesion. **MATERIALS AND METHODS:** The clinical outcomes of thirteen consecutive patients with osteoarthritis of the AC joint and impingement syndrome of the shoulder, who were treated by arthroscopic en bloc resection of the distal clavicle and acromioplasty, were evaluated using the UCLA Shoulder Rating Scale. In this study, the patients with full thickness rotator cuff tear, and advanced osteoarthritis of the glenohumeral joint was excluded. The average age of the patients at the time of operation was 55 years. The average duration of follow-up was 3 years and 1 month postoperatively. **RESULTS:** The UCLA Shoulder Rating Scale for pain was improved from 2.2 (range, 1-4) preoperatively to 9.7 (range, 8-10) postoperatively. Function scale was improved from 4.3 (range, 2-6), preoperatively to 9.8 (range, 8-10) postoperatively, active forward flexion, from 3.8 (range, 3-4) to 5.0, and strength, from 4.3 (range, 3-5) to 5.0. On follow-up radiographic examination, there was no specific complication, including heterotopic ossification and no remnant bony fragment of the distal clavicle. The average amount of distal clavicular resection was 6.2 mm. **CONCLUSION:** This procedure is a recommendable method for the symptomatic AC joint lesion and the rotator cuff lesion, which could get the satisfactory clinical outcomes. **Keywords:** Acromioclavicular joint, Symptomatic lesion, Distal clavicle en bloc resection, Arthroscopic surgery.

**Poster**

**Session: Sports Medicine - Shoulder**

**Abstract number: 22458**

**VOLUNTARY DISLOCATION OF SHOULDER**

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A 10 year-old-boy presented with instability and abnormal movement of the right shoulder. Patient had no past history of trauma or hyperlaxity of joints. After detailed clinical and radiological evaluation patient was labelled as voluntary dislocation of right shoulder. There was no similar history in the family and there was no psychiatric illness in this patient. Voluntary dislocation being a rare entity and there being a paucity of literature regarding treatment protocol, we did an extensive literature search to plan the treatment. We managed this patient by a capsular shift procedure with excellent functional outcome. We reviewed the English literatures regarding this entity and would present the available facts. Keywords: Dislocation, Shoulder, Voluntary.

**Poster**

**Session: Sports Medicine - Spine**

**Abstract number: 19750**

**DIRECT REPAIR OF MULTIPLE LEVEL LUMBAR SPONDYLOLYSIS BY A CABLE SCREW CONSTRUCT**

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**STUDY DESIGN:** Retrospective case series. **Summary of Background Data:** Multiple-level lumbar spondylolysis is a challenging condition. Although many authors described a variety of repair techniques for single-level defects, very few reported the outcome of repair using a cable screw construct for multiple-level lumbar pars defects. **OBJECTIVE:** To analyze the clinical and radiological outcome of this technique and evaluate its possible complications. **METHODS:** Eleven patients with multiple-level spondylolysis of lumbar spine complained of pain not responding to conservative treatment and interfering with everyday activities. The average age was 19y (range 16-23y). The condition involved 2 levels in 9 patients and 3 levels in 2. All patients were treated with segmental fixation by a cable screw construct and autogenous tricortical iliac crest grafting after thorough debridement of the defect. **RESULTS:** Patients were followed for a minimum of three years. Clinical outcome was determined according to Mancabs criteria, and reported excellent in 8, good in 2 and fair result in 1 patient. The mean ODI and SRS total scores were 14 [0-41] and 86 [64-105]. Follow up radiographs and CT scans revealed fusion of all defects in 10 patients, and no fusion in 1 patient which was associated with implant failure. **CONCLUSIONS:** Direct repair of multiple-level spondylolysis using cable screw construct is a successful alternative in these patients who would otherwise had long instrumented fusions. The saved motion segments provide precious spinal mobility in these active young adults.

**Poster**

**Session: Sports Medicine - Systemic**

**Abstract number: 21016**

**MEDICAL SUPPORT FOR PROFESSIONAL FOOTBALL PLAYERS**

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**PURPOSE:** The purpose of this study is to evaluate medical support for professional football players. **METHODS:** From Feb. 2001 to Jan. 2003, I have worked in a Japanese Professional Football League (J-League) club to make medical support for professional football players. There were about 30 players through a year in the club, many Japanese and some Brazilians. **RESULTS:** My works in the club were medical check, injury control, training camp, anti-doping education, condition check, etc. I made effort to take care all the problems in the Medical Room of the club, while I also consulted Hospitals to examine and/or treat players, if needed. Some players had been operated for fractures, ACL ruptures, meniscal tears. **DISCUSSION:** Many injuries happen with football. As I had supported professional football players for 3 years, many injuries and disorders happened. Further, I made individual training and/or rehabilitation menu for injured and/or operated players. In Japan, few doctors work as a team doctor in a professional football club. Many players saw me because of trauma, disorder, fever up, flu, etc. Furthermore, some players had been injured before being in the club, I had to take care and manage all of them. I had to discuss coaches to evaluate condition of each player twice a day and decided next their training menu or keeping rest individually. **CONCLUSION:** It is very important for medical support of professional football players to closely contact with their Coaches.

**Poster**

**Session: Sports Medicine - Systemic**

**Abstract number: 21253**

**TRAMPOLINE INJURIES - WE MUST JUMP TO PREVENT THEM!**

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**INTRODUCTION:** There is an increasing incidence of paediatric injuries trampolines. Little data exists on the compliance of parents with safety guidelines on trampoline use. **AIM:** To assess the patterns of trampoline related injuries in a suburban district and ascertain parents' knowledge and compliance with safety guidelines. **METHODS:** A prospective study was performed between May and July 2007. All patients presenting to our unit with trampoline related injuries were included. Demographic data as well as compliance to safety guidelines were recorded at presentation. Injuries were confirmed by x-ray imaging. Missing data was gathered by telephone interviews. Safety standards were based on those of the Royal Society for the Prevention of Accidents (RoSPA). **RESULTS:** Fifty one patients were included. There were 12 fractures and 39 soft tissue injuries. The lower limbs accounted for 60% of all injuries. In 96% cases there was more than 1 child on the trampoline. Sixty-one percent of parents were unaware that safety guidelines existed. 69% of trampolines had no safety features. Sixty two percent did not supervise children on the trampoline. **DISCUSSION:** Compliance with trampoline safety guidelines is low. This requires addressing with parents as many of these injuries are preventable. Parent education must therefore increase.

**Poster**

**Session: Sports Medicine - Systemic**

**Abstract number: 22324**

**THE EPIDEMIOLOGY OF SPORTS INJURY DURING THE THAILAND NATIONAL GAMES 2008 IN PHITSANULOK**

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**BACKGROUND:** Prevention of injury among athletes is an important medical aspect for sport events. The incidence of injury differs depending on many factors, such as level of competition, type of sport, and standard of surveillance systems. It is our purpose to analyze the epidemiology of a national level competition multi-sports event. **METHODS:** During the 2008 Thailand National Phitsanulok Games, official medical teams of the various sports completed a report form after each match or competition. All data was collected from the PLKGames 2008 program and analyzed by the Medical Surveillance Committee. **RESULTS:** There were 14,429 athletes and staff participating in the Phitsanulok games. There were 497 injuries reported during the competition, of which 301 male and 196 female athletes sustained injuries. Among the 37 types of sport, Rugby, Handball and Basketball incurred 71, 50 and 38 injuries, respectively, which amounted to 32% of all injuries. There were no injuries reported in many types of sport, such as a table tennis, shooting, dancing and golf. The most common diagnoses were sprain and strain. Two hundred and thirty-four injuries affected lower extremities, while 135, 53 and 49 injuries involved upper extremities, head & neck and axial body parts, respectively. The knee and ankle were the most common sites of injury. **CONCLUSION:** The data demonstrates a potential risk of injury occurring predominately in full-contact sports and limited-contact sports. This is potentially useful in developing injury surveillance systems for future sporting events.

**Poster**

**Session: Sports Medicine - Systemic**

**Abstract number: 22607**

**ICE-SKATING INJURIES: AN ANALYSIS OF 341 CONSECUTIVE CASES**

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**BACKGROUND:** Since the first outdoor skating rink of the world was opened in 1909 in Vienna, ice skating has a long tradition in our country. As ice skating is documented as a hazardous leisure time activity for people of all ages, we want to analyze and discuss ice skating injuries of the last winter season. **METHODS:** In a retrospective study we analyzed the prospectively collected data of all injured ice skaters who were treated at our department. Information to the patients and their injuries were entered in a Microsoft Excel database. To see if there are any age related differences in the injury pattern, three different age groups were formed. **RESULTS:** In a period of six months 341 ice skaters were treated at the Department for Trauma Surgery of the Vienna Medical University. The mean age of the attendants was 25 years. We had a predominance of women. Most injuries were bruises followed by fractures and wounds. 44 patients had to be admitted, 25 of them needed surgery. **CONCLUSION:** The majority of the injured ice skaters were younger than 21 years. The most common involved body region was the upper limb. Children are exposed to suffer a laceration of the face if they do not protect their head with a special helmet. Also thick gloves should be worn to avoid blade injuries to the fingers. Another finding of our study is that elderly skaters have a very high fracture rate and also the severity of injury rises in this population.

**Poster**

**Session: Trauma - Ankle/Foot**

**Abstract number: 19351**

**THE FOOT ATLAS FOR INSERTION OF WIRES AND PINS REFERENCE POSITIONS**

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AIM: Well-known atlases for insertion of transosseous elements in foot (Beidik O.V. et al., 2002, Catagni M.A., 2002; Kirienco A. et al., 2004) have not taken into account soft tissues displacement at motions in adjacent joints and, in our opinion, have insufficient number of cuts. Our aim was to develop Atlas, lacking these disadvantages. METHODS: To exactly designate positions of transosseous element insertion the Method of unified designation of external fixation (MUDEF) has been used (<http://rniito.org/solomin/download/mundef.zip>). Reference Positions (RP) for insertion of transosseous elements should be in full conformity with the following requests: absence of main vessels, nerves, tendons (Forbidden Positions) and minimum soft tissues displacement at motions in adjacent joints. To define Forbidden Positions Pirogovs cuts and CT-cuts have been analyzed in 8 series of experiment. The original method has been applied in 5 series of experiments to investigate soft tissues displacement (the patent of the Russian Federation # 2218083). Results. The atlas includes 11 cuts for forefoot, 3 - for midfoot and 4 - for hindfoot. There are from 2 to 4 «Forbidden Positions», from 2 to 8 «Safe Positions» and from 2 to 6 «Reference Positions» in each cut. CONCLUSION: RP application is aimed at decrease of danger of pin-tract infection and pin-induced joint stiffness. It has been confirmed by 19 clinical cases. The atlas of «Foot Reference Positions» will be placed on site <http://rniito.org/solomin/download/atlas-engl.zip>.

**Poster**

**Session: Trauma - Ankle/Foot**

**Abstract number: 21415**

**FOOT COMPARTMENT SYNDROME: PRESSURE MEASUREMENT AND FASCIOTOMY TECHNIQUE**

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Foot compartment syndrome remains under known among general orthopedics surgeons. Pressure measurement can be taken by using different methods: Whitesides technique, wick and slit catheter, Stryker® device and arterial line manometer. The diagnosis of the foot compartment syndrome is best confirmed by multiple monitoring, in the nine compartments of the foot: medial, lateral, adductor hallucis, superficial, 4 interossei and quadratus plantae compartments. The medial, lateral and interosseous compartments are easily accessible by direct puncture. The superficial medial one can be explored either by direct plantar puncture or through the lateral or medial compartments, or the fourth interosseous compartment. The compartment of the adductor hallucis is reached through the medial compartment or through the second interosseous one. The quadratus plantae access is more difficult, because of the neurovascular danger if puncture is made through the hindfoot. However, the puncture can be made trough the medial compartment at the level of first metatarsal base, with a long intra-muscular needle, parallel to the sole and directed back and laterally, at 45° of the foot axis. Pressure greater the 30 mmHg in one compartment is usually admitted as an indication of surgical decompression. One or two dorsal incisions parallel to the second and fourth metatarsals are usually sufficient, but if the quadratus plantae is still compressed, a medial incision can be used. The choice between unique or combined fasciotomy approach depends on the severity of tissue compromise, and on intra-operative pressure measurements.

**Poster**

**Session: Trauma - Ankle/Foot**

**Abstract number: 21515**

**PULMONARY EMBOLISM IN A PATIENT WITH LATERAL MALLEOLUS FRACTURE**

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**BACKGROUND:** Pulmonary thromboembolism is unusual in patients after surgical treatment of malleolus fractures. **AIM:** To present an extraordinary rare case of massive pulmonary thromboembolism in a woman who treated surgically after a lateral malleolus fracture. **CASE REPORT:** A 41 year old woman was transferred in our hospital with dyspnoea, tachycardia and two fainting episodes in a period of 24 hours. Clinical examination of the patient revealed proximal and distal cyanosis, reduction of blood oxygenation, tachypnea, hypotension and BMI >35. The patient was operated for a lateral malleolus fracture 20 days before this episode. Although, the patient was encouraged to walk with crutches she was couchant for several hours every day. Due to increased BMI we prescribed to patient low-molecular-weight heparin for 30 days. A meticulous laboratory examination was performed, as well. Venus ultrasonography Triplex was normal. CT- angiography of thorax confirmed the diagnosis of massive pulmonary thromboembolism. The patient underwent thrombolysis with alteplase because she was haemodynamically unstable. The initial anticoagulant treatment for pulmonary thromboembolism was heparin and we continued the long-term treatment with warfarin. Finally, laboratory testing for thrombophilia showed an insufficiency of C and S proteins. **CONCLUSION:** The supplying of low-molecular-weight heparin in malleolus fractures is controversial. However, it seems that it is imperative in patients with high pretest probability for pulmonary embolism. Probably this anticoagulant treatment may prevent death in the cases that will develop pulmonary embolism.

**Poster**

**Session: Trauma - Ankle/Foot**

**Abstract number: 21791**

**UNUSUAL FRACTURE DISLOCATION OF TALUS: MECHANISM OF INJURY AND MANAGEMENT**

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Fractures of talus have been attributed to variety of traumatic mechanisms ranging from sporting injuries to violent vehicular accidents and aviation crashes. Different classifications have been used to describe fractures of talar body and neck. Hawkins classified talar neck fractures with respect to associated dislocations, Sneppen classified body fractures by fracture geometry, AO/OTA classification explained the involvement of articular surfaces and Pantazopoulos reported an unclassified case of neck fracture involving talo-navicular dislocation with an undisplaced body. We encountered an unusual fracture of talus sustained by a man of 65 years after falling into a drain. Radiographs showed a fracture neck of talus with talo-navicular dislocation, undisplaced talar body, along with a fracture of postero-medial tubercle. Computed tomography demonstrated the fracture pattern clearly. The talar head was operatively reduced by antero-lateral approach and fixed by a Herbert screw. The fracture of postero-medial tubercle involved a large part of posterior facet; therefore was fixed by a cancellous lag screw through postero-medial approach. Ankle was immobilized in cast for ten weeks followed by mobilization in a brace. Fracture of postero-medial tubercle of talus in itself is a rare injury, but its association with a talar fracture dislocation similar to that described by Pantazopoulos has not been reported. Although the mechanism of this unique injury was unclear, the fractures of neck and postero-medial tubercle were thought to be caused by forced dorsiflexion of a pronated foot. But presence of talo-navicular dislocation raised the suspicion of direct impact or fore-foot flexion also being involved.

**Poster**

**Session: Trauma - Ankle/Foot**

**Abstract number: 21816**

**IS THERE A PLACE FOR THE CONSERVATIVE SURGICAL TREATMENT OF NEGLECTED BIMALLEOLAR FRACTURES SUCH THAT THOSE SEEN IN AFRICA?**

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**INTRODUCTION:** In Africa, closed fractures are not received early in hospital. Very often, they are presented late because they are mistaken sprains and thus seen initially by the traditional healer. The goal of this study is to share our initial experience of treatment of these neglected fractures. **MATERIAL AND METHODS:** We received and treated 12 female patients and 3 male patients (either a ratio of 1: 4) old on average 44.5 years at the Rehabilitation Centre of the Disabled of Yaoundé (Cameroon). The treatment consisted of a reduction and internal fixation (ORIF) for 12 ankles, 2 arthrodesis and an alignment osteotomy for plantar support. All were trained in the rehabilitation service of the Centre. There was no total ankle replacement. The functional results were evaluated by Olerud-Molander score (OMAS). **RESULTS:** The delay of surgical management was on average 8.8 months. More than the third of the fractures (33.3%) were dislocations-fractures and 73.3% of these fractures were initially treated by the traditional healer. The first functional results are encouraging a giving cautious optimism. Some minor complications were reported. **DISCUSSION:** In Africa, the surgical indication is always inevitable in case of these fractures with complications. However, these initial results show that it is possible not always to resort to systematic arthrodesis. **CONCLUSION:** An ORIF correctly done followed and in first intention can give a consolidation, indolence and a satisfactory stability allowing the resumption of the activities in these patients whose average age does not exceed 50 years.

Poster

Session: Trauma - Elbow

Abstract number: 19965

**MODIFIED STANDARD SURGICAL PROTOCOL TO TREAT ELBOW DISLOCATIONS WITH RADIAL HEAD AND CORONOID FRACTURES**

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METHOD: 6 patients were operated by a single surgeon. Treatment includes (1) fixation of the coronoid fragment or repair of the capsule anteriorly with an anchoring stitch; (2) replacement of the radial head; (3) repair of the lateral collateral ligament complex. RESULTS: The mean duration of follow-up was twenty-six months, with a range of 1-3 years. The mean arc of flexion-extension (and standard deviation) was  $116^{\circ} \pm 10^{\circ}$ , the mean flexion contracture was  $15^{\circ} \pm 10^{\circ}$ . At the time of follow-up, all six patients had maintained a concentric reduction of both the ulno-trochlear and the radio-capitellar articulation. When pain, ROM and functions are taken into account all six had a good to excellent results. None required a re-operation. One patient who had demonstrated neuropraxia of the radial nerve, recovered completely within 3 months. One had a range of movement was 20-100° but he was happy with the outcome. Conclusion In general, terrible triad injuries are difficult to treat, and, even with optimal care. When managed with a standard protocol, Pugh reported a mean arc of 112°, recurrent instability in 6% and the need for secondary intervention in 22%. We believe that reduction of the small fragment of the coronoid process partially repairs the anterior capsule and thereby reduces joint instability. Further study of the anterior capsules role in the biomechanics of the elbow joint is needed.

**Poster**

**Session: Trauma - Elbow**

**Abstract number: 21606**

**A CASE REPORT ON MYOSITIS OSSIFICANS TRAUMATICA**

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The incidence of myositis ossificans traumatica has been reported in a lesser percentage in other countries we find a slightly higher percentage in Asian countries due to the treatment modalities of native bonesetters. We present a case report where a 13 year-old-boy presented to us with a mass in the elbow and an ankylosed elbow at a flexion of 45 degree. The patient had sustained a trauma to his elbow 1 1/2 yrs ago following which he had underwent treatment with a native bonesetters in the form of massaging and bandaging. The case is presented here for its unique size which was almost equal to that of a major bone. The bony mass was excised; post-operatively patient gained reasonably good range of movements.

**Poster**

**Session: Trauma - Elbow**

**Abstract number: 21655**

**COMPARISON OF CLINICAL RESULTS WITH A NEW TYPE ELBOW FIXED ANGLED PLATE, CONVENTIONAL IMPLANTS, AND LCP PLATES**

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**INTRODUCTION:** The intraarticular fracture of the distal humerus can be a great challenge for the surgeon, especially in osteoporotic bone. **MATERIAL AND METHOD:** Authors introduced anatomically contoured two plates for the fixation of the distal humerus. The design of plate wholes, and the screw heads are special one. This design allows a possibility to insert the screws around a 40 degrees conical shape direction, and provides a very firm stability. Between 01.01.2003 and 31.12.2006 36 dia-supracondyler humerus fractures were treated with the aforementioned method. All of the patients suffered a C2-C3 intraarticular fracture of the distal humerus. The results were evaluated with Mayo Elbow Performance Index. The results were compared with a similar group of patients, treated between 01.01.2000 and 31.12.2003 with conventional implants, and 9 patients, using LCP plates. **RESULTS:** There was altogether one implant failure in the thread stable plate group. All the fractures healed. A change of the fixation method was necessary in one case. The results were better in the group used the thread stable plate than in the conventional implant group, and very similar to the LCP plate group. The results were similar in the thread stable, and LCP group, but the later is only one third of the previous group. **CONCLUSION:** According to authors experience the aforementioned method can be a useful tool in the treatment of the distal intraarticular humeral fractures, especially in osteoporotic bone, and the results are comparable with the LCP plate.

**Poster**

**Session: Trauma - Elbow**

**Abstract number: 21689**

**STABILITY OF CROSS-PIN TENSION BAND CONSTRUCT FOR SIMULATED OLECRANON FRACTURE**

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Oblique transcortical Kirschner wire fixation is a standard procedure for tension band wiring of the olecranon fractures. Although it can minimize the problem of wire loosening, anterior neurovascular injuries and limitation of forearm rotation have been reported as a result of a protruding wire tip. A cross-pin transcortical tension band construct has been designed to diminish those complications while providing secure cortical fixation. However, stability of these two constructs has not been compared. Transverse osteotomy was performed at middle portion of the greater sigmoid notch in 10 fresh-frozen cadaveric elbows. The fractured specimen was randomized to be repaired using both techniques of fixation sequentially. The triceps tendon was grasped and fixated while cyclic loads were applied to the dorsal cortex of the ulna 8 cm distal to the osteotomy site to create a bending moment. The elbow was initially preconditioned at 45 N for 100 cycles, followed by three periods of 300 cycles from 45 N to 135 N in 45 N increments. Fracture gap and articular step-off for the different fixation were recorded. There was no difference in either fracture gap or step-off between these two constructs except at 45 N loading when the fracture gap was significantly smaller in a cross-pin construct ( $p=0.0027$ ). This study demonstrated that the biomechanical performance of a cross-pin tension band on the olecranon fracture model is equivalent to that of an oblique transcortical technique and should be considered as an option to lessen the described complications of anterior cortical wire fixation.

**Poster**

**Session: Trauma - Elbow**

**Abstract number: 22046**

**A NEW TYPE IV MONTEGGIA EQUIVALENT LESION IN AN ADULT**

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Monteggia injury has been classically described to have fracture of ulna with a dislocation of radio-humeral joint. Bado classified these injuries after the direction of radial dislocation; anterior (Type I), posterior (Type II) and lateral (Type III). A rare type (Type IV) has been described to have anterior radial dislocation with fractures of both radius and ulna. Unusual injury types have also been reported by many authors classified as Monteggia equivalent lesions, mostly type I equivalents. But variant of type IV injury is rare in literature. We present an unusual Monteggia type fracture in a man of 25 years who had a fall while getting down from a bus. Radiograph showed a proximal metaphyseal fracture of left ulna with anterior angulation, anterior dislocation of radial head and fracture of mid-shaft of radius along with another fracture in distal third of ulna. Although the fracture geometry pointed towards a type IV Monteggia mechanism, the distal ulnar fracture was an interesting addition; suggesting a possibility of direct trauma being involved. The fracture was reduced by closed manipulation under general anesthesia and fixed by percutaneous insertion of titanium elastic nails into both radius and ulna. The radial head was reduced closed and fixed by a transcapitellar K-wire. A variety of injuries are now known to be caused by the Monteggia mechanism. This case happens to be a unique type IV equivalent, having a segmental ulnar fracture. Percutaneous closed intramedullary nailing is a simple and effective method for management of such injuries.

**Poster**

**Session: Trauma - Elbow**

**Abstract number: 22176**

**THE CONCOMITANT FRACTURES OF THE CAPITELLUM AND THE RADIAL HEAD**

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The concomitant fractures of the capitellum and the radial head in the elbow joint is a rare case. A 56-year-old female presented with complaints of pain, swelling, and limited range of motion in the right elbow after a fall. Radiography, computed tomography, and three-dimensional reconstruction of computed tomography images revealed displaced and comminuted fractures in the capitellum and the radial head. The fractures were treated with open reduction through a lateral approach and fracture fragments were fixed with Herbert screws. Clinical and radiographic results were excellent at the end of one-year follow-up.

Poster

Session: Trauma - Elbow

Abstract number: 22198

**INCIDENCE AND ANALYSIS OF SIMULTANEOUS BILATERAL RADIAL HEAD AND NECK FRACTURES AT A LEVEL I TRAUMA CENTER**

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**INTRODUCTION:** The purpose of this study was to analyze the incidence and outcome of simultaneous bilateral radial head fractures. **MATERIAL AND METHODS:** This study reviewed the clinical records and trauma database of this Level I Trauma Center and identified all adult patients with fractures of the radial head or neck who were admitted between 1992 and 2007. Radiological scoring was performed according to Johnstons modification of the Mason classification. To quantify the clinical results, the Mayo Clinic Elbow Score (MCES) was used. **RESULTS:** From a database of 2296 trauma victims with radial head or neck fractures, an analysis of clinical records revealed 34 patients suffering from simultaneous bilateral injuries (68 fractures). Thus, the incidence of simultaneous bilateral fractures was 1.48%. We found bilateral type I injuries in 47.1% (n = 16), a combination of type I and type IIa in 20.6% (n = 7). Non-operative treatment was performed in 86.8% (n = 59). Screw fixation was performed in 10.3% (n = 7). Combination of screws with a T-plate was performed once (1.5%). Implantation of radial head prosthesis was necessary in one case (1.5%). All patients achieved solid bony union. Full satisfaction concerning treatment was achieved in 97% of the patients. The MCES showed an overall- functional outcome score of 97.1 (range 75 - 100). **CONCLUSION:** The frequency of this injury was assessed for the first time in literature and the incidence was 1.48%. Our material was representative and included 2296 injuries covering a 15-year period.

**Poster**

**Session: Trauma - Elbow**

**Abstract number: 22511**

**RARE CASE OF A CONGENITAL ARTERIOVENOUS MALFORMATION (PARK WEBER ANGIODYSPLASIA) AROUND THE ELBOW WITH MEDIAN NERVE COMPRESSION**

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A 28 year-old-male presented to us with pain and sudden increase in preexisting swelling around the left elbow of one year duration. Examination revealed an arteriovenous malformation with signs of median nerve compression and a fixed flexion deformity of the elbow. Xray revealed Lytic lesion in head of left humerus and Bony erosions in the lower end of left humerus with pathological fracture. CT/ MR Angiogram confirmed the site and extent of arteriovenous malformation and the presence of a high flow fistula. Trauma is one of the factors implicated in the sudden increase of a quiescent AV malformation as in this case. Complete excision of the malformation is required because subtotal resections result in recurrence. This form of presentation as a high flow congenital arteriovenous malformation around the elbow with osseous changes and nerve compression, we believe is a rare presentation. Keywords: Congenital Arteriovenous malformation, trauma, median nerve compression, high flow, Park Weber angiodysplasia

**Poster**

**Session: Trauma - Femur**

**Abstract number: 19732**

**SUBTROCHENTERIC FRACTURE FIXED WITH VARIOUS IMPLANTS AND OUTCOM A STUDY OF 78 CASES**

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Sub trochanteric fracture is 7 to 10% of proximal femoral fracture. Relatively younger patient injured more and elderly population with poor bone quality and unstable type of fracture pattern and associated comorbidities are more common. In June 96 to Jan 01, 78 sub trochanteric fracture analysed in this study for its outcome and results. Age from 15 to 70 years (mean 42.5), injury shows 38% fall from height, and 54% having high velocity trauma injury and 8% having trivial injury and 12% having associated injury. Seinsheimer classification IIb, IV, IIIb, V is common. 51(65%) patient used DCS plate, 15(19%) patients used DHS plate, 09(12%) used IM nails, 03(4%) used enders nail systems. Immobilization ranging from 04 week to 46 week and type IV pattern having delay mobilization (8%). Radiological union seen at 8 to 46 weeks (mean 27), 91 % with DCS, 68% with DHS, 100% with IM nail. 27% patient having shortening of 0-4cm and 4% having superficial and 4% having deep infection. 73% patient having normal walking distance and 81% can squatting as per pre injury status. 14% required additional surgery. Modified Harris hip score is 42(54%) patient having excellent, 18(23%) patient having good, 15(19%) patient having fair, 03(4%) patient having poor result. Hip score range from 121 to 46 (mean 83.5). Conclusion is Less comminuted fracture better fix with IM devices and comminuted fracture better fix with DCS or DHS, and in elderly patient enders nail is choice of implant.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 20211**

**INTERTROCHANTERIC FRACTURES: DYNAMIC HIP SCREW PLATE FIXATION? SUPERIORITY IN NAILING ERA**

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**OBJECTIVE:** The talk is with objective to present the status and relevancy of Dynamic hip screw plate fixation for Intertrochanteric fractures of femur. **SUMMARY:** Intertrochanteric Fractures of femur are one of the commonest fracture seen and treated surgically by all levels of Orthopaedic surgeon, world over. With advent of proximal femoral nailing, the Dynamic hip screw-plate fixation for Stable Intertrochanteric fractures is getting marginalised. The preference is getting shifted to Interlocking Proximal femoral Nailing over Dynamic Hip Screw Plate fixation. This is happening, as nailing is propogated to be less invasive and tissue protective; and more stable. On the other hand the gold standard treatment of Dynamic Screw plate fixation has also undergone few modifications in techniques and design, to be less invasive and tissue protective; and more stable. The author anaylsis the current literature and his own experience of Minimally invasive Dynamic Hips screw plate fixation and its relevancy in this era of nailing.**Conclusion:** The nailing for Stable Intertrochanteric is hyped, there exits no superiorty evidence rather Dynamic Hip screw plates fixation scores much heavily in terms of Cost effectiveness and user friendly.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 20653**

**TREATMENT OF COMPLICATED DISTAL FEMORAL FRACTURE BY DFN - A STUDY IN 43 CASES**

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Complicated distal femoral fracture with osteoporosis is difficult but challenging. This accounts 6% of all femoral fractures and causes complication like shortening and residual deformity. IM nailing is biomechanically ideal method of internal fixation for weight bearing long bones. Keeping this in view a prospective study was done for distal femoral fracture with DFN. Aim of this study is to establish that the operative treatment by DFN for complicated distal femoral fracture is a good and effective option. In this study 43 patients (38 male, 5 female) age group 22-62 years are taken. Most of them received high velocity injury. All had complicated distal femoral fracture C33 with articular involvement and treated with DFN and cannulated condylar screw. All patients operated on second/third day. First of all articular reconstruction by cannulated cancellus screw done, then fracture reduced. Under image intensifier, entry point selected. DFN introduced either by transpatellar or parapatellar tendon route. DFN locked proximally and distally. In some cases spiral blade is used for better hold in osteoporotic bone. This enhances angular stability and resist axial load. Static knee exercises from day one, knee bending, partial weight bearing after six weeks, full weight bearing after clinical and radiological union. Out of 43 patients 4 had shortening by half to one inch, 2 had infection, 8 who had medial defects needed bone-grafting. In 25 cases fractures heal soundly. Union occurs in average 10 months. This study shows DFN is the most suitable implant to address complicated distal femoral fracture.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 20830**

**BRIDGE PLATE IN TREATMENT OF CLOSED COMMUNATED DIAPHYSEAL FEMORAL FRACTURES**

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Comminuted fractures of femurs are difficult to treat and carry a great deal of morbidity and complications that effect the function of the limbs, many modalities of treatments has been currently used, conservative by traction and braces, operative by plating, intramedullary nailing or external fixation, currently closed and locked intramedullary nailing is in use. This is a propectivestudy to assess the efficiency of using the bridging (Biological) plate technique in the treatment of comminuted diaphyseal fractures of the femure in adults. Nineteen male patients were included who sustained 19 comminuted diaphyseal fractures of the femure, all fractures were closed, all treated by applying long bridging broad plate without disturbing the comminution site were followed up for average of sixteen months, degree of comminution was type C according to the AO/ASIF classification. Results were excellent and good in 13 (68.6%) patients, fair in 3 (15.7%) patients. Union time was 16 weeks as mean ranged from 12-32 weeks. Complications noticed as two patients had delayed union, 2 had superficial wound infection, a broken plate, a broken screw, 3 had shortening 1-3 cm, and several patients developed moderate degrees of knee flexion limitation improved by physiotherapy. We conclude that bridging plate technique internal fixation in comminuted fractures of femoral shaft in a good alternative method of treatment that gives good results when other modalities are not available or more demanding. Keywords: Femoral fractures, femoral internal fixation, plating of femurs comminuted femoral fractures, bridging plated

**Poster**

**Session: Trauma - Femur**

**Abstract number: 21044**

**SEGMENTAL FRACTURE OF THE FEMUR WITH CONCOMITANT GENU VALGUM - A ONE STAGE SOLUTION**

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Segmental fractures of the femur are high energy injuries usually treated with internal fixation. We present the case of such a fracture with associated genu valgum from a prior physeal arrest which prevented standard intramedullary nail or minimally invasive plate fixation. A technique of simultaneous correction of the distal femoral deformity coupled to stabilisation of the segmental fracture is reported. Surgery involved an external fixator-assisted corrective osteotomy of the deformity and simultaneous minimally invasive plating of the segmental fracture.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 21651**

**SALMONELLA OSTEOMYELITIS WITHOUT ANY COEXISTING DISEASE**

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Salmonella osteomyelitis is a rare entity, reported in individuals with preexisting diseases like hemoglobinopathies, malignancy or liver disease. We report this pathology in an otherwise healthy male of 21 years. The patient presented with significant pain of right thigh of five months duration. There was no history of trauma. The patient had a history of a febrile illness of 15 days duration two weeks prior to the onset of thigh symptoms. His initial illness was diagnosed as Enteric fever on the basis of rising Widal agglutination titres and the patient was treated with oral ciprofloxacin at that time. Examination at the time of presentation to us revealed tenderness in mid thigh area. The patient was afebrile. Widal titres were raised. X-ray and CT Scan of femur were normal. MRI showed soft tissue edema and a lesion on the diaphyseal surface. A differential diagnosis of typhoid osteomyelitis, tubercular osteomyelitis or Ewing's Sarcoma was entertained. Biopsy revealed noncaseating inflammatory changes. The patient was treated with intravenous third generation cephalosporin for three weeks to which he responded. This was followed by oral antibiotics. X-ray at 6 weeks demonstrated erosive changes which reverted to normal over ensuing 6 months. Widal agglutination titres also became normal on follow up. Salmonella osteomyelitis characteristically involves diaphysis in a long tubular bone affection. It is clinicoradiologically indistinguishable from other types of chronic atypical osteomyelitis. The symptoms may be mild in the beginning and the patient may be afebrile. A careful detailed past history might provide clue to diagnosis.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 21654**

**RHODOTORULA RUBRA AS A CAUSE OF PERSISTENCE OF INFECTED FEMORAL NONUNION IN AN IMMUNE COMPETENT PATIENT**

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**INTRODUCTION:** Rhodotorula species has emerged as a significant cause of infection in immunosuppressed hosts and in patients with foreign devices. We present case of Rhodotorula infection in patient with infected non-union of long bone fracture. **MATERIAL AND METHODS:** 30 year male sustained closed fracture shaft of left femur following which intramedullary nailing was done. He developed infection. Patient was treated by debridements and antibiotics. Seven months later patient presented to us as non-union fracture shaft femur with nail in situ, and discharge from the operative site. His investigations were normal except raised ESR (62mm). HIV Status: Negative. We removed the nail, and stabilized femur with AO Tubular External Fixator. Tissue for culture showed Staphylococcus aureus and he was given antibiotics. Patient was subjected to repeat debrima and implantation of Gentamicin beads. Four weeks later beads were removed, wound debrided, and Kuntscher nailing done as fixator became loose. Culture showed growth of Rhodotorula rubra and MDR Acinetobacter species. The fungus is considered as normal contaminant and, as per culture results IV antibiotics were started. After 10 days repeat culture showed profuse growth of same fungus. Thereafter patient was screened for immunocompromised status twice which was normal. **RESULTS:** Amphotericin-B was then started which rapidly led to healing of wound. Fracture united over ensuing 4 months with bone grafting. Repeat culture for fungus were negative. **CONCLUSION:** Rhodotorula rubra is yeast like fungus with cosmopolitan distribution. This case highlights the need to consider fungal etiology in a non-healing wound. It responds favorably to antifungal drugs.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 21770**

**THE TREATMENT OF TROCHANTERIC FRACTURES BY PC.C.P.PLATE**

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**PURPOSE:** The purpose of this study is to introduce a new type of surgical implant PC.C.P (percutaneous compression plate) for miniinvasive treatment of trochanteric fractures. **MATERIAL AND METHOD:** During November 2004 and December 2007 we performed 66 patients with trochanteric fracture. All these patients were treated with PC.C.P.plate. Patients mean age at surgery was 74,5 years (rage 27-95 years). The pertrochanteric fracture (AO 31 A1.1-A2.3) was in 73% patients, fracture of the femoral neck (AO 31 B2) in 20% and intertrochanteric fracture (AO 31 A3.1) in 7% patients. The reposition on fracture table we control in both projections (AP and axial X-ray) and we used normally PORD (Posterior Reduction Device). **RESULTS:** Patients were followed minimally 12 months after operation. The X-ray signs of healing were approximately 3 months after operation. We did not note any failure or false joint after surgery. In postoperative period was allowed the full weight walking for every patient. The limit was just their own pain. The comeback to independent walking or walking with one crutch was in 81%, needed two crutches and 11% patients were not able to walk without support before injury. **CONCLUSION:** The percutaneous compression plate PC.C.P. for treatment of trochanteric fractures is contribution for miniinvasive osteosynthesis. The biggest advantages of this technique are minimal operative trauma and no fracture exposure, double-axis telescoping fixation, decrease of post-operative pain and of blood waste, prevention of collapse and return to pre-fracture independent mobility.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 21893**

**THE EFFICACY OF LOCAL TRANSPLANTATION OF GRANULOCYTE COLONY STIMULATING FACTOR-MOBILIZED HUMAN PERIPHERAL BLOOD MONONUCLEAR CELLS FOR UNHEALING BONE FRACTURE**

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We previously reported that transplantation of human peripheral blood (hPB) CD34+ cells contributes to fracture healing via vasculogenesis/angiogenesis and osteogenesis. Meanwhile, not only hPB CD34+ cells but also hPB total mononuclear cell (MNC) transplantation has shown their therapeutic efficiency to enhance ischemic neovascularization. We here tried to prove a hypothesis that hPB MNC transplantation may also contribute to fracture healing via vasculogenesis/angiogenesis and osteogenesis. The unhealing fracture models of nude rats are created by cauterizing periosteum on each side of the fracture. The rats received local administration of following materials with atelocollagen; ten million hPB MNCs (Hi group) containing one hundred thousand CD34+ cells, one million hPB MNCs (Lo group) or PBS. In immunohistochemistry and real time reverse transcriptase-polymerase chain reaction using tissue samples harvested at week1, differentiated human endothelial cells and osteoblasts (OBs) were identified in Hi and Lo groups, but not in PBS group. Rat capillary and OB density was significantly greater in Hi group than the other groups. Laser doppler perfusion imaging showed that the blood flow ratio at week1 was significantly higher in Hi group compared with the other groups. In 30% of animals receiving Hi dose hPB MNCs, fractures radiographically and histologically healed, while fracture site in all animals of the other groups fell into non-unions at week8. Local transplantation of hPB MNCs contributes to fracture healing via vasculogenesis/angiogenesis and osteogenesis. However, even if we adjust CD34+ cell number, therapeutic potential of hPB MNCs for fracture healing is inferior to CD34+ cells.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 22024**

**PROXIMAL FEMORAL LOCKING COMPRESSION PLATE (PF-LCP) FOR TREATMENT OF PATHOLOGIC FRACTURES**

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Proximal Femoral Locking Compression Plate (PF-LCP) is recently an angular-stable implant desired for unstable proximal femoral fractures fixation. The plate is contoured anatomically to the proximal femur and the locking screws provide rigid fixation of the construct. Although promising outcome has been reported in osteoporotic fractures, result of using this device in pathologic fractures is debatable. Therefore, the objective of this study is to evaluate clinical and radiographic outcomes of pathologic proximal femoral fractures treated with PF-LCP. We conducted a prospective study in 6 femora (5 patients) treated with PF-LCP. All patients were women. The average age was 40.8 years. There were 4 pathologic fractures and 2 impending fractures. Two patients had CA breast, two had CA lung and one had bone cyst. In addition to plate fixation, curettage and cement filling were performed in 2 patients and allograft augmentation was utilized in one with bone cyst. Clinical outcomes and serial radiographs were evaluated. Mean follow-up time was 13.3 months. All but two patients with bilateral involvement could subsequently walk on partial weight-bearing. Functional rating of the hip joint was rated good to excellent in all but two patients. Pain relief was achieved as good to excellent in 80%. Local recurrence and disease progression were evidenced in two patients. No patient died at the time of last follow-up. PF-LCP provides stable fixation of pathologic fractures and facilitates good quality of life in the metastatic patients, although local recurrence and disease progression cannot be prevented.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 22140**

**SHORT TERM RESULTS OF COMPLEX SUPRACONDYLAR FRACTURE**

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The treatment of the distal femoral fracture remains a significant surgical challenge. The non operative treatment of distal femur with or without significant articular involvement causes problems like Malunion, Nonunion and Joint stiffnes. Significant advances in the patient outcome have been achived with Open reduction and rigid internal fixation. During the year 2004-2007, out of total of 56 cases subjected to fixation, 5 were bilateral involvement, 3 of them were associated with head Injury, 2 with ipsilateral femur fracture, 2 with Neck of Femur fracture, 5 cases having tibial condyle fracture, 4 with Ipsilateral Tibial shaft fracture, 3 cases with associated patella fracture and 1 with bimallular. Among those, 8 were compound fractures, 1 Gr III and 7 Gr I. The results were excellent in 28, good in 16, fair in 8 and poor in 4 cases. To conclude, anatomic reduction and rigid fixation did offer improvement in function, it did not guarantee uniform satisfactory result but good skill and technique gives nearly a satisfactory result.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 22299**

**MODULAR ADAPTIVE ORTHOPEDIC BONE PLATE BASED ON SHAPE MEMORY ALLOYS**

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The idea of this paper is related to design modular adaptive implants using intelligent materials with shape memory for fractured bones. Different applications in the biomedical field exploit remarkable properties of Nitinol: biocompatibility, superelasticity, hysteresis, shape memory effect, steerability, excellent corrosion resistance. Nitinol has great advantage of compatibility with MRI which don't pose radiation risks. The proposed implant is a modular bone plate with modules made out of Titan and staples made out of Nitinol. The shape memory staples, in their opened shape, are placed in the special places build in to the modules. Through heating, this staple tends to close, compressing the modules and determining the translation of the modules and the separated parts of bone are compressed. The force generated by this process accelerates healing and reduces the time of bone recovery. The modules allow little movement in the alignment of the fractured parts, reducing the risks of wrong orientation or additional bones callus. After a particular stage of healing period is passed, using implant modularity, the load is gradually transferred to bone, ensuring in this manner a gradually recover of bone function. The adaptability is related to medical possibility of doctor to made the implant to correspond to patient specifically anatomy. Using CT numerical bone models, the mechanical simulation of the fractured bones are presented using FEM. For identifying the optimal design, different implants were developed and experimented using numerical simulation. We used SolidWorks for implants designing, ANSYS software for discretisation and VisualNastran for implants simulation.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 22361**

**ARE THE PLATES WITH ANGULAR STABILITY THE UNIQUE ANSWER IN DISTAL FEMORAL FRACTURES TYPE C3/AO?**

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**AIMS:** In this study, the authors are emphasizing the advantages of the internal fixators (LISS-DF or LCP-DF) in type C3/AO distal femoral fractures. **METHODS:** The study included 7 fractures type C3/AO, 2 of them being open fractures (1 grade II and 1 grade IIIA / Gustilo with bone loss). The authors performed first a lateral parapatellar arthrotomy and reconstruction of the articular block; the block was indirectly reduced and fixed to the femoral shaft by a plate with angular stability which was inserted into the epiperiosteal space by means of an aiming device. The correction of the reduction for metadiaphyseal region was made using a special instrument. The implant was stabilized by the screws insertion (monocortical and percutaneously for diaphysis) which locks into the holes and prevents tilting. The excellent stability of the bone-implant construct allowed fast knee rehabilitation. **RESULTS:** 6 fractures healed within a mean time of 10 weeks. For the fracture with bone loss we have performed secondary bone grafting combined with bone substitute. There were no infections or implant failures. The outcome, using (the Neer scale) was excellent in 3 cases and satisfactory in the other 4 cases. **CONCLUSIONS:** Despite the fact that the authors prefer the LCP plates due to their versatility and combi-holes, LISS and LCP-DF provide a unique answer in multiplane complex fractures type C3/AO with short distal fragment; at the same time, osteoporosis and open fractures which complicate these difficult lesions, could be managed only by these plates with angular stability.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 22404**

**LCP IN OPERATIVE TREATMENT OF PERIPROSTHETIC FEMORAL FRACTURES AFTER HIP REPLACEMENT**

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The periprosthetic femoral fractures after THR have increased in the last years. The internal fixation is preferred in the cases of stable stem. In the cases of instability or stem breakage the change with revisional one and the placement of allograft is needed. MATERIALS: For a 5 years period we treated 20 patients with periprosthetic femoral fractures after THR. These were 12 women and 8 men at the age from 55 to 88. We used the Vancouver classification, and mainly: 10 of the cases were B-1 type, 4 were B2 type and 6 – C type. Two of them we placed allograft. In 16 of the cases we realized with LCP and additionally we put wires. We had two patients with breakage of the prosthetic stem with femur bone fractures. In these cases we replaced it with revisional stem and we put wires. RESULTS: In the assessment of the results we used the criteria of Duncan. All the patients were followed up to bone union. In 18 (90%) of them the fractures consolidated in anatomical position. Thirteen patients (65%) use crutches permanently. Two patients (10%) are in bed. We do not have any case of non-union, infection or reosteosynthesis. CONCLUSION: We recommend the usage of LCP-plates and allograft. The plates provide significant biomechanical stability of the fixation, having in mind the bad quality of the bone of these patients, and the placement of cortical allograft plays double function – once as a biological and once as a mechanical strut.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 22454**

**THE ROLE OF PFNA BLADE IN THE TREATMENT OF FEMORAL NECK FRACTURES**

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The PFNA system is a reliable construction for the treatment of pertrochanteric fractures. In the year 2006 in our department we started to use the PFNA blade to stabilize femoral neck fractures, first time in the world. Biomechanical examinations have proved the increased stability after intracapsular fractures. During the last three years we have applied this method 146 times. During the follow up, we have analyzed the movement of the blade in the femoral head, and the resorption zone around it. We have determined the shortening of the femoral neck with the measurement of the lateralization of the blade. Follow up has been performed 6 and 12 weeks after the operations. The blade has more advantages compared to the femoral neck screws. We could start earlier the mobilization. If we could recognize a good callus-building, then we have suggested full weight bearing. We had to revise the synthesis in some cases: In 2 cases because of the perforation of the femoral head, and in eight cases a redislocation could be found on the X-ray. Well, we suggest using the blade of the PFNA, for the treatment of the femoral head fractures, because of the good rotational stability and the compression resulting in the region of the fracture. In our presentation we would like to present the steps of the operation and our initial results of 146 operated patients.

**Poster**

**Session: Trauma - Femur**

**Abstract number: 22462**

**MODIFIED JIG FOR BIOLOGICAL DCS**

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**AIM:** Modification of ordinary jig (angle guide) used for DCS fixation so as to make it more suitable for biological DCS. **MATERIALS AND METHODS:** We have modified the jig used for ordinary DCS fixation so as to make it more suitable for biological DCS. In ordinary DCS jig, the hole for guide wire lies towards one end. At the other end handle is attached, and hence to use this jig, we have to expose the femur for a minimum length equal to that of the jig. We have removed the handle and attached it adjacent to hole for guide pin, so that the other end is free and can be slid in submuscular plane without actually exposing the whole length of femur (i.e. making a small muscle deep incision sufficient to facilitate entry of tip of jig). Subsequently, we beveled the free end and removed the sharp points and this helps in making sub muscular plane easily and with minimum soft tissue trauma. **RESULTS:** The modified jig was applied in a patient with fracture subtrochanteric femur in submuscular plane through 2 cm long incision and its position confirmed by c-arm. Position was found to be similar to that observed with ordinary DCS jig. **SUMMARY:** The idea of making this presentation is that we can modify classical instrumentation used for internal fixation so as to make them suitable for biological fixation and this is a small innovation in that direction. **KEYWORDS:** Modified jig, Biological DCS, fracture subtrochanteric femur

**Poster**

**Session: Trauma - Femur**

**Abstract number: 22508**

**HOFFAS FRACTURE - STILL A CHALLENGING PROBLEM**

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**BACKGROUND:** HOFFA fracture is a difficult problem in knee trauma it is the coronal split in femoral condyle. The Hoffa fractures and intra-articular distal femur fractures have previously received little attention. Hoffa fracture poses problems 1. Difficulty in initial diagnosis; 2. Difficulty in anatomical reduction; 3. Difficulty in fixation - implant selection & its placement. **MATERIAL:** We present our series of 14 cases of Hoffas fractures Age of 15yrs to 75yrs; Medial -6, Lateral -6 & Both- 2; Simple-10, comminuted -4;. AO Muller type B3 -10, C3 - 4; Delayed treatment due to missed diagnosis 3 cases. Associated supracondylar fracture 4 cases and high energy trauma 4 cases. **METHODS:** Closed reduction attempted by knee distraction & ligament taxis in all cases. 4 cases reduced by closed method while 10 required open reduction. The lateral approach used in 5, medial approach in 2, combined midline in 3 cases. The implant used were 2 cases K wires; 4 cases cancellous screw 4mm; 5 cases titanium cancellous screw; 3 cases required combined implants. **RESULTS:** The unicondylar Hoffa fractures, 85% involved the equally medial and lateral condyle. Two out of 14 injuries (15%) involved coronal split fractures of both the medial and lateral femoral condyles the injured extremities with bicondylar Hoffa fractures. Plain radiographs identified these fractures in only 72% of patients. Computed tomography (CT) was used to make the diagnosis in an additional 15% of patients. **CONCLUSION:** Operative treatment has been recommended for recognized injuries. Missed fractures treated non-operatively have been associated with poor results.

**Poster**

**Session: Trauma - Forearm**

**Abstract number: 21641**

**VOLAR APPROACH TO ULNA - A NEW SURGICAL APPROACH**

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**INTRODUCTION:** The ulna is usually approached through its subcutaneous border. However, in some limited clinical situations, approach to ulna, from volar side may be required. We describe a new volar surgical approach to ulna. **MATERIAL AND METHOD:** We have done cadaveric (n=2) and clinical studies (n=20) on this approach. The clinical indications to approach ulna from volar side were- foreign body removal (4 cases), benign tumor excision (2 cases) and biopsy from ulnar shaft (14 cases). **APPROACH:** The incision is given on the medial border of flexor carpii ulnaris (FCU). FCU retracted medially and palmaris longus along with median nerve radially. This brings the flexor digitorum superficialis (FDS) in view, which is handled in different manner for upper one-third or lower two-third shaft exposure. Then, ulnar neurovascular bundle is retracted ulnarwards (except in upper third-ulnar artery retracted radially); vertically slit the flexor digitorum profundus (FDP) belly into ulnar one-third and radial two-third, to go through the inter-neuronal plane to expose ulna. For lower-one fourth of ulna, either vertically cut the pronator quadratus along the ulnar shaft, or reflect the origin of pronator quadratus radialwards. **RESULTS:** No complications were encountered using this approach. All patients regained their preoperative power and grip strength. **CONCLUSION:** The described approach, though may be required in very selective cases (like foreign body removal, tumor excision, biopsy etc.), is safe and neurovascular bundle is handled the same way, as for Henrys approach for Radial shaft exposure. The nerve supply to FDP is retained.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 19506**

**THREE-DIMENSIONAL MODELING OF FOREARM EXTERNAL FIXATION**

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AIM: An experimental investigation of rigidity of bone fragment fixation is laborious & complicated process. The algorithm of modeling of forearm bones external fixation was worked out by us. METHODS: Virtual forearm skeleton was made on the base of the forearm MRI data by parametric modeling with SolidWorks software. It includes bones and soft structures, implementing force transmission between forearm bones (lig. annularis radii, interosseous membrane, triangular fibrocartilage complex of the wrist). When making the model with high degrees of accuracy the geometric parameters of all components were kept. All components were combined in the virtual forearm skeleton. 3D model of the external fixation frame (EFF) was made too. The data characterizing geometry of the elements of the system forearm skeleton+EFF and their mechanical properties were used to define element loaded deformation. Modeling of deformities caused by longitudinal, transversal & torsion static forces was made by COSMOSWorks software. The proximal metaphys of the ulna was taken as a fixation point. All the forces were applied to the distal metaphys of the radial bone. As a result angle & linear translation of the bone fragments were determined. RESULTS: The data received in calculations & bench tests were compared. The value of the error in calculations of the rigidity of EFF on the base of wires was 8-12%, of half-pins 5-7%, hybrid - 6-10%. Optimum frame assemblies were obtained ([http://rniito.org/solomin/download/atlas\\_CEF.zip](http://rniito.org/solomin/download/atlas_CEF.zip)). CONCLUSION: Algorithm of modeling we used allows defining bone fragments rigidity fixation with accuracy of 88-94%.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 20810**

**BILATERAL SIMULTANEOUS SPONTANEOUS HABITUAL ULNAR DISLOCATION OF THE EXTENSOR DIGITORUM COMMUNIS TENDON OF LONG FINGER: A CASE REPORT**

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CASE REPORT: A twenty-two-year-old right dominant male patient presented with complaints of recurrent dislocation of extensor tendon of long finger of both hands at metacarpophalangeal joint for the past one year. His chief disability was the inability to difficulty in writing and thus was not able to sit for his examinations. On clinical examination, complete ulnar dislocation of the extensor tendons of bilateral long finger was seen when the MP joint was flexed at 60 degrees or more. SURGERY: The superficial layer of the sagittal band covering the extensor tendon was found to be ruptured just radial to the extensor tendon and also the palmer part of the extensor tendon was detached from the deep layer of the sagittal band. The soft tissue on radial side of the tendon was found to be grossly lax. A 1.5 x 0.3 cm sling was fashioned from the lax tissue and looped around the EDC tendon and stitched on itself so as to act as a 'chekrein'. In addition to this, double breasting of the remaining lax tissue on radial side of tendon was done thus increasing restraint to ulnar dislocation. Four weeks of postoperative immobilization with a splint with the MP joint in a slightly flexed position was given. This was followed by active and passive mobilization of the MP joint. At sixteen weeks after surgery, patient had full range of motion without pain and the tendency for extensor tendon dislocation had disappeared.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 20827**

**MINI INTERNAL FIXATION OF METACARPLS AND PHALANGES**

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**ABSTRACT:** The purpose of this presentation is to study and qualify the treatment of closed fractures of metacarpals and phalanges by mini plates and screws versus other methods of operative treatment in the hand. Forty eight bones in thirty patients were fixed by mini plates and screws of the AO (ASIF) technique and instrument, all were males with mean age of 28 years, forty bones were fixed following recent closed fractures, eight bones were fixed with bone graft for treatment of non union of metacarpals. 95% of the cases had good results after six months of follow-up. Complications were minimal to two patients. This method was found useful in treatment of closed fractures of the hand and provided good cure and function. It needs trained surgeons in specialized centers of hand surgery.

**KEYWORDS:** Metacarpal & phalangeal fractures, internal fixation of hand fractures.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21212**

**SIMULTANEOUS DISLOCATION OF INTERPHALANGEAL AND METACARPOPHALANGEAL JOINTS OF LITTLE FINGER**

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**INTRODUCTION:** Multiple dislocations of the finger are extremely rare. Our review of literature revealed no case reports with simultaneous dislocation of metacarpophalangeal (MCP), proximal and distal interphalangeal (IP) joints of little finger. **CASE REPORT:** Eighteen-year-old-boy attended A&E following hyperextension injury to the little finger of right hand while playing football. On examination the little finger was deformed. X-ray revealed dorsal dislocation of the MCP, PIP and DIP joints of little finger. Under GA, the PIP and DIP joint dislocations were reduced by closed method. Closed reduction of MCP joint dislocation failed. On opening the MCP joint, the head of the 5th metacarpal was found to be button-holing between volar fibrocartilagenous base and superficial transverse ligament. The tight structures were released and the dislocation was reduced. At 3 months follow-up, he had 80 degrees of MCP joint flexion and full flexion and extension of IP joints with no evidence of instability. **DISCUSSION:** Multiple dislocations of the joints in hand are uncommon injuries. MCP joint dislocations are less common than IP joint dislocations. Interphalangeal joint dislocations are usually easily reduced by closed method, but MCP joint dislocation often needs open reduction. In MCP joint dislocation of the index finger, the head of the metacarpal is frequently seen button-holing between the natatory ligament and the superficial transverse ligament with flexor tendon and lumbrical on the sides. These structures have to be released to reduce the joint. The same was seen in the little finger dislocation in our case report.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21485**

**DIVERGENT FRACTURE DISLOCATION OF THE ULNAR CARPO- METACARPAL JOINTS**

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A case of divergent fracture dislocation between the third and medial 2 ulnar carpo -metacarpals is presented. Description of this injury in the literature has been reviewed and the case is presented, because of its rarity. Probably it is the 5th-6th case reported. Hand injuries due to longitudinal forces in the line of the metacarpals demonstrate unusual dislocation pattern. We discuss a case of volar intraarticular fracture dislocation of the ring and little finger carpometacarpal joint. We treated the patient with close reduction with good recovery of hand function.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21538**

**MORPHOLOGY OF THE EXTENSORS OF THE THUMB**

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Suture of injured extensor tendon on the dorsum of the hand or on the fingers can usually be expected to give good results, in contrast to those of flexors. The tendon of the extensor pollicis longus [EPL] is sometimes ruptured in connection with colles fracture. The EPL is an extensor of the thumb, the others being the abductor pollicis longus [APL] and extensor pollicis brevis [EPB]. The arrangements of human extensor muscles of the thumb have great variability. The variations in the APL tendons are involved in the etiology of tenovaginitis of de Quervain. This paper reports the findings of the study conducted on EPL, APL and EPB in 47 right and 53 left randomly selected upper limb specimens of adult human cadaver. In this study the common pattern of arrangement of APL was a single tendon at origin in 82% and two tendons at insertion in 73%. The EPB in this study was single tendon at origin and insertion in majority of the specimens (98%); however in 2 right hands this muscle was absent. EPL did not show any variations, it was a single tendon from origin till insertion in all the limbs.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21542**

**A COMPREHENSIVE STUDY OF THE EXTENSOR TENDONS TO THE MEDIAL FOUR DIGITS OF THE HAND**

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Awareness of the anatomy and variations of the extensor tendons of the dorsum of the hand is necessary while assessing the traumatized or diseased hand and when considering tendons for repair or for transfer. A complete quantitative documentation of the extensor tendons is lacking and so this study of the arrangements of the human extensor tendons to the medial four fingers namely, the extensor digitorum communis [EDC], Extensor indicis proprius [EIP] and Extensor digiti minimi [EDM] over the dorsum of the wrist and hand has been performed in hundred adult upper limb specimens. The findings were photographed, tabulated and analyzed statistically. In 98% of the specimens EIP was having a single tendon with single insertion, where as in two right upper limbs there were two EIP tendons with two insertions. In 77% of the specimens the EDC distally gave tendons to middle three fingers [extensor digitorum communis index (EDCI), extensor digitorum communis longus (EDCL) and extensor digitorum communis ring (EDCR)]. The extensor digitorum communis small [EDCS] was present in only 23% of the study sample. The extensor digiti minimi [EDM] showed normal anatomy in only 20% of the cases.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21593**

**OPERATIVE TREATMENT OF DISTAL RADIUS INTRAARTICULAR FRACTURES**

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Fractures of the distal epimetaphysis of the radius are frequently occurring in up to 30% of all fractures. In unstable comminuted fractures monolateral external fixation and plating are preferable. We have analyzed the results of treatment in 235 patients within the age range from 18 to 78 years with distal radius fractures between 1980 and 2008. According to the AO-ASIF classification, the majority of cases were type C2 fractures; type A (extraarticular) in 20.8% patients; and intraarticular type B and C fractures accounting for 79.2% patients. Bartons fractures were diagnosed in 6.8% patients, reverse Bartons fractures in 4.7% cases. We provide an original method in the treatment of old distal radius fractures which includes: close reduction with hydropreparation by local anesthetic; osteoperforation of the zone of fracture with K-wire; and subsequent stabilization with anchor apparatus of external fixation with demountable distal block that allows early functional rehabilitation of the hand and fingers. Our method allowed us to reduce neurological complications from 11% to 2%. The duration of hospitalization in patients, operated according to our method was  $10.5 \pm 2.1$  days, outpatient care period was 5-6 weeks and the period of working disability was not more than 8-10 weeks. Our method may be applied within 2 months after trauma, in the later period corrective osteotomy is indicated.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21670**

**FUNCTIONAL OUTCOME IN DISTAL RADIAL FRACTURES - COMPARISON BETWEEN FRACTURE SEVERITY, TREATMENT OF CHOICE AND INITIAL RADIOLOGICAL PARAMETERS**

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The AO Classification has a prognostic value for the outcome of patients, and assists physicians in their planning of managing fractures. Radiological data and DASH (Disabilities of the Arm, Shoulder and Hand) questionnaire are tools used to evaluate radial fractures outcome. Over the past ten years, it has been observed a trend for open treatment as opposed to percutaneous fixation or closed reduction of distal radial fractures. The present study was designed to evaluate the functional outcome of this fractures treated with different methods of fixation. Prospective study evaluating functional outcome with a six-months to one year follow up with the DASH questionnaire, correlating the results with the treatment of choice, mechanism of injury, fracture type according to the AO classification and initial radiological parameters. All distal radial fractures in adults that had been treated in the emergency-room over a one-year period were reviewed. Although the differences were small, outcomes revealed that a higher percentage of patients who had been managed with percutaneous fixation or external fixation had no pain and normal function but some deformity as compared with patients who had had closed treatment. There were correlation between the fracture type and the radiological parameters with the functional outcome. No other differences were found between the different techniques used. Regardless the treatment of choice for distal radial fractures, the most important goal is restoring normal radiological measurements to improve the functional outcome and reduce long term complications. The use of closed methods remains as a good treatment option.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21685**

**AVASCULAR NECROSIS OF SCAPOID: WHY LESS IN INDIAN SUBCONTINENT**

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Scaphoid being the bridge of bone between two rows of carpals is an important bone for the hand, gets injured and may lead to non-union more rapidly than others. We tried to compare the results of non-unions in Indian and western population. We did microdissection, injected poyster seine in the dissected vascular tree of scaphoid, counted vasculsr forami a in dried specimens and radiographed the scaphiode. RESULTS: Found that vasculra supply in Indians in the proximal part of bone is better as compared the western literature, by Obeltz and Halbestein. CONCLUSION: The proximal pole of scaphoid is 6% more vascular then in western population.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21747**

**POSTERIOR INTEROSSEOUS ARTERY FLAP FOR RESURFACING POST TRAUMATIC SOFT TISSUE DEFECTS OF THE HAND**

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**INTRODUCTION:** The need for soft tissue coverage of large defects in the hand and wrist following trauma is a common problem for hand surgeons. Flap coverage of these defects can be either in the form of distant or regional flaps. The posterior interosseous artery flap recently has emerged as a front runner in these situations with its. **MATERIALS AND METHODS:** 32 Posterior interosseous artery flaps were used in 32 patients with complex soft tissue defects of the hand. All these defects were post traumatic. The recipient sites were dorsum of the hand and wrist, volar defects and I web space. The donor site was closed either primarily or by a split skin graft. **RESULTS:** All flaps healed well and there were no incidences of flap necrosis. The donor site required a split skin graft in 24 patients. The flap was bulky in 1 patient and transient Extensor Carpi Ulnaris weakness was seen in three patients. **CONCLUSION:** The posterior interosseous artery flap is a versatile flap for coverage of soft tissue defects of the hand. Good aesthetic results can be achieved with minimal donor site morbidity. It preserves the major vessels of the hand. Harvesting the flap requires a precise surgical technique and as many perforators as possible should be preserved to ensure flap viability.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21750**

**REPLANTATION OF DIGIT IN CHILDREN**

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Replantation of a digit is one of the most challenging procedures in microsurgery especially after a complete amputation. Replantation in children or young adults has lower survival rates than reported for adult replantation. There are several procedures to increase viability. However, there is no consensus whether arterial or venous anastomosis should be carried out first. This includes the numbers of vessels to be repaired. In this case report an excellent result of viability after venous anastomosis before arterial anastomosis is presented. At least 24 months after replantation the patient can use his finger almost without problems in daily life.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21797**

**AO TYPE C DISTAL RADIUS FRACTURES MANAGED USING MULTIDIRECTIONAL LOCKING PLATES**

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**INTRODUCTION:** Operative fixation is the treatment of choice for unstable, comminuted intraarticular fractures. **MATERIAL:** At Department of Traumatology of Teaching Hospital Motol between January 2007 and December 2008 there was treated and followed up 83 patients with unstable AO type C radius fractures by open reduction and internal fixation using multidirectional locking plates. **METHODS:** Aptus radius®2,5 (fi Medartis, Schweiz) is a system of locking plates for open reduction and internal fixation of distal radius fractures. **SURGICAL PROCEDURE:** In all cases we used volar-modified Henry approach: longitudinal incision slightly radial to the flexor carpi radialis tendon, dissection between the flexor carpi radialis tendon and the radial artery. Under direct visualization the fractures then were reduced. **RESULTS:** The average period of X-ray healing was 7,7 weeks. The average radial height was 11.7 mm, the radial inclination was 25.5°, the volar tilt was 10.2°, the ulnar variance was 0.7 mm and the articular incongruity was 0.2 mm at six months following the procedure. The average functional results at six months following the procedure were: palmar flexion 52.9°, dorsal flexion 60.4°, radial duction 25,4°, ulnar duction 37.5°, pronation 88.3° and supination 85.8°. **CONCLUSION:** Central, targeted fixation of the fracture fragments (fragment-specific fixation) and introduction of locking screws provide stability, which minimalizes duration of additional fixation and enables early rehabilitation.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21809**

**NAIL BED GRAFTING IN AVULSED DEFECTS OF THE NAIL BED**

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**BACKGROUND:** Nail bed and fingertip injuries are commonly seen in the Emergency Department. Sound judgment and knowledge of fingertip and nail bed anatomy are essential for outstanding good outcome. Insufficient management of avulsed defect leads to irregular non-adherent nail. **PATIENT AND METHOD:** We present the results of our experience in the management of 30 patients with avulsed defect of the nailbed using split thickness nail bed grafting taken from great toe or from little toe or, harvesting of nail bed from amputated parts and reuse of them as a graft. **RESULTS:** All achieved normal nail growth and the overall result of the repair was good. Complications were few and patients' satisfaction with the management was high. **CONCLUSION:** Immediate grafting of nailbed after avulsed injury is a good choice treatment for avoidance of long term complication of nailbed repair.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21933**

**SIMULTANEOUS BONY AVULSION OF FLEXOR DIGITORUM PROFUNDUS TENDON AND AVULSION FRACTURE OF THE VOLAR PLATE OF DISTAL INTERPHALANGEAL JOINT: A CASE REPORT**

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The authors present case of bony avulsion of the insertion of flexor digitorum profundus tendon which retracted to the level of proximal interphalangeal joint simultaneous with avulsion fracture of distal attachment of the volar plate of distal interphalangeal joint. This pattern of injury has not been reported previously and unable to be categorized by the current classification. It was successfully managed by the pullout suture tied over an external dorsal button.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 21955**

**RADIOGRAPHIC STABILITY OF THE WRIST IN PATIENTS WITH PURE DISTAL RADIO FRACTURE AND ASSOCIATED DISTAL ULNAR FRACTURE - 3 WEEKS OF FOLLOW UP WITH CONSERVATIVE TREATMENT**

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**INTRODUCTION:** There is discrepancy in the treatment of distal radial fractures alone and those associated with ulnar distal fractures, between conservative and surgical treatment. **MATERIAL AND METHODS:** Clinical trial, prospective, longitudinal, comparative. We studied 60 patients with distal radial fractures Frykmanns types I and II, who came to Hospital Español since June 2006 to June 2008, wrist radiographs in anteroposterior and lateral views were taken to both groups on its arrival; radiological data were measured and recorded post reduction maneuvers and 3 weeks after initial treatment, the patients underwent closed reduction and immobilization with a U splint for 3 weeks. The results were submitted to descriptive and inferential statistical analysis (t Student and r Pearson). **RESULTS:** Before reduction maneuvers: In both groups the radiological parameters showed a direct proportion; group 2 had a radial length and ulnar variance significantly higher. After reduction maneuvers: both groups had normal radiological parameters, at 3 weeks: the group 2 had a significantly increase in the number of residual deformities. **DISCUSSION:** In fractures of the distal radius: the radial length is the radiometric prognostic value for residual deformity, the association of an ulnar distal fracture affects the radiographic stability of the wrist. A distal radial fracture with an associated distal ulnar fracture requires surgical treatment.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 22018**

**BONE MINERAL DENSITY IN POSTMENOPAUSAL WOMEN WITH FOREARM FRACTURE**

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This research is aimed at studying the bone mineral density (BMD) among postmenopausal women with forearm fracture. OBJECT: The total of 116 postmenopausal women -50–79 years old- were examined. The sample included postmenopausal women with forearm fracture in their anamnesis (n=36; average age: 62,4±0,9 years; PMP: 12,6±0,9 years) and without any osteoporotic fracture (n=80; average age: 66,1±1,2 years; PMP: 16,8±1,4 years). Patients were divided into the following age-dependent groups: 50-59, 60-69, 70-79 years old. METHODS: The questionnaire; measurement of anthropometrical characteristics; BMD of the total body, spine (L1-L4), hip and forearm were determined by means of Dual-energy X-ray absorptiometer 'Prodigy' (GE Medical systems, 2005). RESULTS: BMD of different skeletal areas was significantly ( $p<0,001$ ) lower for postmenopausal women with forearm fracture compared with the data of women without forearm fracture: in the group of 50-59 year-olds (total body, spine, total femur); in the group of 60-69 year-olds (total body, spine, total femur, ultradistal forearm, midforearm); in the group of 70-79 year-olds (total body, spine, total femur, midforearm). The prevalence of forearm fracture in the group of 50-59 year-olds was 16,3%, in the group of 60-69 year-olds - 37,2%, in the group of 70-79 year-olds - 43,3%. CONCLUSION: BMD of different skeletal areas was significantly lower for postmenopausal women with forearm fracture compared with the data of women without forearm fracture.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 22177**

**THE EFFECT OF TRIMMED WIRE TIP ON GLOVE PERFORATION IN ORTHOPAEDIC SURGERY**

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**PURPOSE:** To evaluate the effect of trimmed sharp end on glove perforation, we measured perforation force of sharp materials. **MATERIALS AND METHODS:** We compared the perforation forces of double surgical gloves between trimmed and untrimmed end of 18 gauge (Group 1), Kirshner wire (Group 2) and between cutting needle and blunt taperpoint needle (Group 3). The cutting end of 18 gauge and K-wire was trimmed with a diamond-coated wheel of high speed drill to make the end blunt. The perforation force was measured with a digital force gauge (ARF-02, Attonic Co). Measurement was repeated 10 times for each model. Statistical comparisons were performed with the ANOVA test. P values of  $\leq 0.05$  were considered to be significant. **RESULTS:** The perforation force of the cutting end of 18G wire was 1.321N ( $\pm 0.155$ ), but that of the trimmed end was 4.535N ( $\pm 0.504$ ). The perforation force of K-wire was 1.362N ( $\pm 0.115$ ), but that of the trimmed end was 4.053N ( $\pm 0.304$ ). There was no difference between cutting needle (0.361N $\pm$ 0.035) and blunt taperpoint needle (0.351N $\pm$ 0.039). The perforation force of the cutting end of 18G wire was similar to that of the end of K-wire, and when the sharp end was trimmed, the perforation force of the double gloves increased greatly ( $p < 0.05$ ). **CONCLUSION:** Trimming of sharp end is simple. It will reduce the perforation rate of surgical gloves and prevent orthopaedic surgeons from being exposed to an unexpected disease.

**Poster**

**Session: Trauma - Hand/Wrist**

**Abstract number: 22200**

**STRENGTH OF THE BICEPS MUSCLE AND FUNCTIONAL OUTCOMES OF THE HAND IN PATIENTS WITH UPPERARM TYPE BRACHIAL PLEXUS INJURY POST-RECONSTRUCTIVE SURGERY**

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This study is a descriptive research aiming to investigate the relations of post-reconstructive surgery duration, strength of the biceps muscle, and functional outcomes of the hand in patients with upperarm type brachial plexus injury post-reconstructive surgery. The sample was composed of 63 patients who were receiving follow-up treatments at the Orthopedic Follow-up Clinic on the 1st floor of Syamindra Building, Siriraj Hospital, from June to November 2007. The research instruments were an interview questionnaire and the Michigan Hand Outcomes Questionnaire (MHQ). The strength of biceps muscle was examined according to the British Medical Research Council system (MRC). The majority of the sample was males (88.9%). The most frequent cause of injury was motorcycle accidents (93.7%). The majority of the patients demonstrated recovery of the biceps muscle at a good level (M4-5) (69.8%) and the mean score of the functional outcomes of the hand was 49.63 (S.D. = 15.23). The correlation study showed that the strength of the biceps muscle was found to have a positive correlation with functional outcomes of the hand in patients with upperarm type brachial plexus injury post-reconstructive surgery ( $r = .331, p < .01$ ). Given these research findings, it is recommended that collaboration in the multidisciplinary care team should be strengthened. Patients should have assessments of muscle strength and attend a rehabilitation program for maintenance of muscle strength and for promoting hand skills by performing activities. This will be beneficial for functional outcomes of the hand.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 19536**

**USE OF RAPID PROTOTYPING AND THREE DIMENSIONAL RECONSTRUCTION MODELLING IN MANAGEMENT OF COMPLEX ACETABULAR FRACTURE**

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The production of a copy of the fracture or a deformity in a bone with a complex geometry can be one of the important applications of the integration between two modern computer-based technologies, reverse engineering (RE) and rapid prototyping (RP). This poster reviews recent development in this field and presents a case reports about use of medical CT/MRI scanning, three-dimensional reconstruction, anatomical modelling, computer-aided design, rapid prototyping and computer-aided implantation in treating a complex case of bi-columnar fracture of acetabulum. The use of rapid prototyping technology helped to understand the fracture configuration, reduced the surgical time, decreased the requirement of anesthetic dosage, decreased intra-operative blood loss and helped to achieve near anatomical reduction. The merging of computational analysis, modelling, designing and fabrication will serve as important means to treat conditions and fractures of spine, acetabulum and craniofacial region.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 19820**

**MODIFIED KOCHER AND LANGENBECK SURGICAL APPROACH TO ACETABULUM**

Narender MAGU

*Pt B D Sharma PGIMS Rohtak, Rohtak (INDIA)*

**SURGICAL TECHNIQUE:** Place the patient in floppy lateral position with the affected hip uppermost. No skeletal traction through the distal femur or upper tibia is applied to the injured hip. The technique comprises of working on the medial surface of the posterior column either through the rent in the soft tissues or through the windows between gluteus medius and piriformis muscles anteriorly; and between the short rotators and ischial tuberosity posteriorly without dividing the rotators. Further, the gluteus minimus muscle is not lifted subperiosteally. The fracture is reduced using indirect reduction techniques. The reduction is assessed from the configuration of the greater sciatic notch and interlocking of the ragged fracture ends per-operatively. The under surface of the piriformis muscle is separated from the posterior wall of the acetabulum and the plate is slid deep to short muscles followed by osteosynthesis of the posterior wall, transverse and other types of fractures likely to be stabilized by conventional Kocher and Langen beck approach. The Surgical approach is atraumatic, biological, less demanding, preserves the vascularity of the head of the femur and there is no chance of injury to branches of circumflex femoral arteries. Since gluteus minimus is not stripped from the ilium, heterotopic ossification has not been observed. Also iatrogenic sciatic nerve palsy is not observed since no spike is used to keep the nerve retracted. Inability to correct rotation of anterior column fractures is the limitation.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 20223**

**TRAUMATIC HIP DISLOCATION IN A REGIONAL TRAUMA CENTRE IN NIGERIA**

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**INTRODUCTION:** Traumatic dislocation and fracture dislocation of the hip is an absolute Orthopaedic emergency that is steadily on the increase due to high speed motor vehicular accidents. A delay in recognition and reduction leads to preventable complications such as avascular necrosis of the femoral head and post-traumatic Osteoarthritis. The aim was to describe the presentation, pattern, management and outcome of traumatic hip dislocations at National Orthopaedic Hospital, Enugu, Nigeria. **METHODS:** A retrospective study of all patients with traumatic hip dislocation between January 2003 and December 2007 was undertaken. **RESULTS:** A total of 53 patients were treated, 50 patients with 52 hip dislocations were analyzed. Thirty-nine patients (78%) were males while 11 (22%) were females. The age range was between 12yrs to 67yrs with an average of 34. 8 yrs. Road traffic accident accounted for 92% of cases. Posterior dislocation occurred in 48 cases (92.3%), anterior dislocation in 1 case (1.9%) while central dislocation occurred in 3 cases (5.8%). **DISCUSSION:** Majority of the cases of traumatic dislocations of the hip joint seen at National Orthopaedic Hospital, Enugu were grades 1 and 11. Forty-nine patients (98%) had closed reduction under general anaesthesia within 12 hours of arrival. Prompt treatment of these patients may have resulted in the low incidence of complications in only 9 patients (18%). **CONCLUSIONS:** Early recognition and prompt, stable reduction is the essence of successful management.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 20418**

**FINITE ELEMENT ANALYSIS OF FEMORAL NECK AND INTERTROCHNATERIC FRACTURE WITH VARIOUS IMPACT LOADS**

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**INTRODUCTION:** Femoral neck and intertrochanteric fractures have a high incidence and there is still need for thorough biomechanical analysis of fracture mechanisms for fall prevention. To evaluate this, we chose finite element analysis as a mean to simulate femoral neck and intertrochanteric fractures. We conducted a detailed fracture analysis with the finite element method using various impact loads in a 3D model of the proximal femur. **MATERIAL AND METHODS:** We used the image data from the National Library of Health visible human project. Using the axial CT scans of the male dataset, we converted this to a stereolithographic (STL) image of the skeleton using Landmarker<sup>TM</sup> software. A 3D surface model of the upper femur was constructed from this model, using Solidworks<sup>TM</sup> software. The finite element model consisted of a trabecular core surrounded by a cortical shell which we tested using various loads, employing Cosmos<sup>TM</sup> software. **RESULTS:** We have successfully simulated intertrochanteric and femoral neck fractures after different fall loads. The simulations included direct impact and rotational force. The results were identical to the known fracture mechanisms in these two types of common fractures. **CONCLUSION:** We have shown that finite element analysis is useful for simulating fracture mechanisms with various loads and different directions of impact. In the study, we only used one bone model with one definition of cortical and trabecular bone properties. Future studies could include simulation of different bone properties, muscles and different loads. Other possibilities include simulation of osteosynthesis in the different types of fractures.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 20464**

**COMMINUTED TROCHANTERIC FRACTURE ASSOCIATED WITH POSTERIOR DISLOCATION OF HIP A RARE ASSOCIATION**

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A unique fracture pattern involving ipsilateral comminuted trochanteric fracture associated with posterior dislocation of hip in a young adult male following road traffic accident is described. The patient was a 40 year-old-male who suffered a road traffic accident following which he suffered a posterior dislocation of left hip with comminuted trochanteric fracture extending into subtrochanteric region. Ipsilateral undisplaced transverse fracture of patella and tibial plateau were also associated. Neurovascular status was normal. Closed reduction failed. Open reduction of the hip was done using lateral approach. The fracture was fixed with dynamic condylar screw & plate. Tibia and patella fractures were treated conservatively. At 3 years follow up the fracture had united and the patient had a painless hip with full range of motion. No evidence of avascular necrosis of femoral head was noted. The pattern of injury doesn't fit into present classification systems described for hip dislocation injuries. We hypothesise that the mechanism of injury could be longitudinal orce with adduction followed by external rotation or a direct injury to trochanter. No such pattern of injury could be found in the orthopaedic literature. We claim this to be the first case of its type to be reported ever.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 20845**

**OSTEOPOROTIC PERTROCHANTERIC FRACTURES: EARLY RESULTS WITH PFNA-II FROM A TERTIARY CARE CENTER**

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The dynamic hip screw has been a time tested device which has been overshadowed in recent times with the availability of intramedullary hip screws. In this article we report our experience with the use of PFNA II for these fractures at a tertiary care center. 20 consecutive patients presenting with an unstable pertrochanteric fracture were treated using PFNA II at our hospital. Immediate post operative radiographs were assessed for screw position with respect to nine quadrants of the femoral head, TAD and quality of fracture reduction. In addition; degree of collapse, medial displacement of the shaft if any, implant position, union and hardware integrity were assessed in the follow up radiographs. The early functional outcome was analysed by using the modified Harris hip score at 6 months and 1 year. Radiological union was achieved in all patients at a mean time of 11 weeks. The mean TAD was 20 mm (range: 10-35 mm). The mean neck shaft angle at immediate post op x rays was 130 degrees (120-145). There were no incidences of varus collapse at last follow up. There was significant medialisation of the shaft in any case. Implant cut out was seen in a patient and was revised. Early surgical stabilisation and mobilization is paramount in case of Trochanteric fractures in the elderly. Fixation with PFNA provides a stable construct with technical ease and allows early mobilization and recovery. It shortens the surgical time, allows controlled collapse at the fracture site with minimal medialisation and shortening.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 20890**

**A RARE CASE OF EXTENSIVE HETEROTOPIC OSSIFICATION WITH EXTRA-ARTICULAR HIP ANKYLOSIS**

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Heterotopic Ossification(HO) commonly develops around hip joint after traumatic brain injury(TBI). We report a case of extensive anterior HO mass presenting as ankylosed hip. A 27 year old female involved in RTA and sustained TBI four years ago presented with progressive restriction of left hip with inability to squat and sit cross-legged. She was comatose for a fortnight following TBI and had recovered to Garland class II neurological status following physiotherapy/rehabilitation. Clinical examination revealed fullness in Scrapas triangle with ankylosed left hip in 300 flexion, 150 external rotations and 200 abductions. The ipsilateral knee had fixed flexion deformity of 200. Radiographs revealed a bony mass extending from ilium to anterior femur. 99m technetium bone scan & alkaline phosphatase and 3DCT delineated the exact dimensions of HO mass. The mass was excised by Smith-peterson anterior extensile approach uneventfully. The excised mass measured 19.8cms and histopathology confirmed the diagnosis of mature myositis ossificans traumatica. The patient subsequently underwent extensive physiotherapy and took 100 mg indomethacin PO for six weeks. At 2 yrs post-op, she was pain-free, had 90° hip flexions, 300° abduction/adduction, 200° internal/external rotations with full ROM in knee and was able to squat/sit cross-legged. Extensive HO leading to anterior mass of 20 cms is rare and surgical excision coupled with physiotherapy & indomethacin results in significant functional improvement. HO should figure in differential diagnosis list of patients presenting with decreased hip ROM on a background history of TBI.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 21043**

**TOTAL HIP REPLACEMENT FOR DISPLACED INTRACAPSULAR NECK OF FEMUR FRACTURES – EXPERIENCE OF A DISTRICT GENERAL HOSPITAL**

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The treatment of displaced intracapsular neck of femur fractures with total hip replacement has been controversial due to the reported high rate of complications. We present our experience in the treatment of such injuries with total hip replacements. Between 1999 and 2007, 42 patients with displaced intracapsular neck of femur fractures were treated with total hip replacements in our unit. The average age at operation was 67.6 years with the majority of patients being females. Almost 86% of patients were either mobile independently or with the aid of one stick preoperatively. The median stay post operatively was 12 days with a shorter duration of stay in patients less than 70 years of age compared to those aged 70 years and above. 38% of the implants used were cemented prosthesis while the rest were nearly divided between uncemented and hybrid prosthesis. With a minimum of two years follow up, 6 complications were recorded; prosthesis dislocation in four patients of which three cases needed revision surgery, aseptic loosening of the acetabular component in one patient and deep infection in one patient and both cases needed revision surgery. All of the complications apart from the deep infection case were in patients above the age of 70 years. We believe that total hip replacement as an option for the treatment of displaced intracapsular neck of femur fractures in patients below the age of 70 years is an option with a good outcome.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 21147**

**CEMENTED VS UNCEMENTED THOMPSON'S HIP HEMIARTHROPLASTY PROSTHESIS - COMPARISON OF POST-OPERATIVE MORBIDITY AND MORTALITY**

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**INTRODUCTION:** Hemiarthroplasty using Thompson prosthesis is a well recognised procedure for the treatment of displaced intracapsular fracture neck of femur in the very elderly. Although the Thompson prosthesis was originally inserted without cement, many surgeons prefer to implant the prosthesis with cement. **AIM:** The purpose of our retrospective study was to compare the clinical outcomes following cemented and uncemented Thompson hemiarthroplasty. **METHODS:** 112 consecutive patients underwent Thompson hemiarthroplasty in the year 2006. 22 patients were male and 80 were female with an average age of 83.2 yrs. 30 (26.8%) were cemented and 82 (73.2%) were uncemented prosthesis. The decision to cement or not was based on the operating surgeons preference. Pre- and postoperative mobility at discharge was recorded in detail. Mortality and other peri-operative complications were noted with special emphasis on postoperative thigh pain. **RESULTS:** There was no statistically significant difference between the two groups in terms of mobility outcomes, thigh pain or peri-operative mortality. **CONCLUSIONS:** We conclude that although cemented Thompson hemiarthroplasty is a safe procedure, the cement need not be used routinely in the less active group of elderly people. However, large prospective randomised trials are required to establish it conclusively.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 21152**

**ANATOMY OF L4 - S2 NERVE ROOTS AND THE SACROILIAC JOINT**

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**AIMS OF INVESTIGATION:** To find out the relationship between L4 to S3 nerve roots and sacroiliac joint for application in pelvic surgery, the study was carried out. **MATERIALS AND METHODS:** Embedded left half pelvises of 52 cadavers were studied by direct open dissection. Ventral rami of L4, L5, S1, S2 and S3 nerve roots were identified and dissected along their courses from the corresponding intervertebral foramina down to the lesser pelvis. The distances between the anterior most of sacroiliac joint and the nerve roots were measured both in coronal and sagittal plane. **RESULTS:** Normal variation of L4 nerve root was found and could be divided into 3 groups, fusion with L5 nerve root above (30%), at (30%) and below (30%) the sacroiliac joint. Fusion of S1 and S2 nerve roots at sacroiliac joint was found in 10%. Most of nerve roots lay medial to the sacroiliac joint and closed to the anterior cortex of ala of sacrum within 7 mm medially, except S3 nerve roots. These nerve roots should be concerned during resection at sacroiliac joint and ala of sacrum. Dissection with sharp instrument should not be carried out through sacroiliac joint and 10 mm medial to the joint. **CONCLUSION:** Most of lower lumbar and upper sacral nerve roots lay close to the anterior surface of sacroiliac joint and ala of sacrum. These nerves should be protected during surgery.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 21665**

**BOTH COLUMN ACETABULAR FRACTURES WITH SECONDARY POSTERIOR COLUMN OR WALL INVOLVEMENT**

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**PURPOSE:** To provide guidelines for the management of complex both column (BC) acetabular fractures with additional secondary fractures of the posterior column (PC) and/or wall (PW). **MATERIALS:** All operative acetabular fractures from a single academic institution were reviewed over a 20 month period. BC fractures with a displaced secondary PC or PW fracture were selected and the clinical, radiographic, and functional outcomes reviewed. **RESULTS:** 112 acetabular fractures were treated operatively over a twenty months, including 22 BC fractures. Twelve had additional secondary PC and/or PW involvement, forming the study group. Seven had an additional PW, one had a segmental PC, and four had both PW and PC involvement. Seven were treated through an ilioinguinal approach only. Five were staged with two separate approaches. Three PW fragments were percutaneously reduced and fixed. The segmental PC pattern was fixed with screws alone. Average follow up was 19.2 months. Two were converted to THA at 13.5 and 20 months. The average SMFA bother index = 17.8, SMFA function index = 17.1, SF-36 physical component = 41.3, SF-36 mental component = 54.6, Merle D'Aubigne=98, Harris Hip Scores=86. Complications included two peroneal nerve palsies, one DVT, and one seroma. **CONCLUSION:** BC fractures with additional posterior involvement may not always be accessible through the ilioinguinal approach. Secondary PW fractures may be fixed percutaneously; however, a segmental PC may justify a secondary posterior approach. Functional outcomes scores, complications, and THA conversions were comparable to other studies involving complex acetabular fractures.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 21844**

**DYNAMIC HELICAL HIP SYSTEM VS DYNAMIC HIP SCREW, A PROSPECTIVE STUDY SINCE RESENT LAUNCH - OUTCOMES IN TROCHANTERIC FRACTURES**

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Hip fractures are the most common fractures in the elderly. Since the launch of the DHS system, there had been developed many materials and techniques for the osteosynthesis of those fractures. Our objective is to evaluate the effectiveness of each system minimizing all the risk factors that interfere in the complications during the hospitalization. We perform a retrospective, transversal, case and controls study with the experience use of the DHS and the present launch of the DHHS in our country. We included all the pertrochanteric fractures type AO 31 A. In both groups of 20 patients each, all with proper cardiovascular evaluation risk, we compared the surgical wound pain, hemoglobin loss (mean 1.6 gr/dL) more in DHS system; the surgical time evaluated at the incision and the end of the last screw of the plate, (DHHS mean 23.5 min), (DHS 31 min), the avascular necrosis risk during and later of the Surgical period, the Length of the incision required for the both systems, (DHHS mean 7 cm) (DHS 10 cm) and the complain in both techniques at the end of the surgery in a scale of 10. (DHHS 8, DHS 5), DHHS provides excellent outcome as the DHS. In the first year of the DHHS launch, we see some better advantage versus the DHS.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 21846**

**BIOLOGICAL PLATING WITH DYNAMIC CONDYLAR SCREW IN MANAGEMENT OF COMMUNATED SUBTROCHANTERIC FRACTURES: A CLINICAL STUDY**

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Subtrochanteric fractures are fraught with certain anatomical, biological and biomechanical challenges with increased incidence of nonunion and malunion. To evaluate technical difficulties and the results of patients treated with biological plating for comminuted subtrochanteric femoral fractures, between Jan 2004 and May 2007, 40 patients with a mean age of 36 years with comminuted subtrochanteric fractures, classified according to AO/OTA classification were treated with biological plating with dynamic condylar screw under fluoroscopy control. Union was achieved in all cases at a mean of 15.6 weeks, with one major and 3 minor technical difficulties. We had limb length discrepancy in 5 cases averaging 1cm and rotational deformity in 4 cases. We had excellent results in 45% cases, good results in 50% cases and fair in 5% according to Sanders criteria. There was no statistically significant difference between the healthy and fractured sides with respect to femoral shaft-neck angles. Use of fracture table, adequate two plane fluoroscopy and adherence to technical details give predictable results with an implant available at an affordable cost more so in countries with low socio-economic status.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 22082**

**PATIENTS AGED 80 AND OLDER UNDERGOING ORTHOPEDIC OR UROLOGIC SURGERY - A PROSPECTIVE STUDY FOCUSING ON PERIOPERATIVE MORBIDITY AND MORTALITY**

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**BACKGROUND:** The population is progressively aging and surgical patients are growing older. Age is considered risk factor in various medical situations though data is limited. The current study was design to examine the perioperative morbidity and mortality of elderly patients undergoing orthopedic or urologic surgery. **METHODS:** A prospective study of patients, 80 year old and older, who underwent elective or emergent orthopedic or urologic surgery in our institution during a 5 month period. Collected data: age, gender, chronic diseases, number of medications, whether the patient was bedridden before surgery, American Society of Anesthesiologists (ASA) class, type of surgery and anesthesia, duration of hospitalization, postoperative morbidity and mortality. **RESULTS:** During the investigated period 147 and 39 patients underwent orthopedic and urologic surgery respectively. Age ranged from 80 to 98 years (mean= 85, SD= 4.2 years). One patient had intraoperative complication (pneumothorax), 5 patients had postoperative complications within a day from surgery and 23 had complications within a month from surgery. Five patients died: 9, 11, 16, 20, and 23 days after the surgery (2.7%). All 5 patients were operated urgently. Postoperative complications correlated significantly to poor ASA class ( $p=0.01$ ), urgency of the procedure.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 22119**

**THE MORTALITY RATE AFTER THROMBOEMBOLISM PROPHYLAXIS IN THE HIP FRACTURE SURGERY**

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**BACKGROUND:** Although hip fracture surgery treatments have been improved, the mortality rate remains high because of a high risk of complications, such as myocardial infarction and venous thromboembolism. Our objective is to determine the 1-year mortality rate of thromboembolism prophylaxis and non-prophylaxis after the hip fracture surgery. **MATERIAL AND METHODS:** 114 patients who had undergone the hip fracture surgery between 2004 and 05 were given follow-up examinations every 3 months for 1 year. **RESULTS:** Of the 114 patients, 25 patients (21.9%) have received the medical thromboprophylactic protocol and 89 patients (78.1%) have not. The 1-year mortality rate was 12.0% (3 cases) and 9.0% (8 cases) in the thromboprophylactic group and nonprophylactic group, respectively ( $P=0.704$ ). The mean age was significantly older in the deceased group (86.4 year old, SD 12.86) than the non-deceased group (78.0 years old, SD 8.04) ( $P=0.003$ ). The median duration from postoperation to death was 19 weeks after the surgery (range 0.5- 52 weeks). The causes of death were acute myocardial infarction 3 (27.3%), sepsis 2 (18.2%), aspiration pneumonia 1 (9.1%), and unknown cause 5 (45.4%). **CONCLUSION:** The overall 1 year mortality rate after surgery of the hip fracture is 9.6% and it is not different regardless of whether the medical thromboembolism prophylaxis has been established or not. Myocardial infarction was the most common cause. The elderly patient is at a higher risk of mortality in 1 year after the surgery.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 22141**

**LESS INVASIVE DYNAMIC HIP SCREW - A NEWER TECHNIQUE AND OVERVIEW**

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Intertrochanteric fractures are one of the most common fractures of the hip, especially in the elderly with porotic bone, usually due to low energy trauma. Problems associated with this fracture are substantial morbidity and mortality, financial burden and associated age related medical problems. Closed method of treating Intertrochanteric fracture has been abandoned to increase in morbidity and mortality and poor outcome. Rigid fixation like conventional DHS and early mobilization of patient is considered as the standard way of treatment. Disadvantages of conventional DHS approach is large skin incision, more soft tissue dissection and greater blood loss, thus contributing to increase in mortality and morbidity. Minimal invasive DHS Technique has greater advantage of low blood loss, decrease in pain intensity and less analgesic requirement. It also reduces the stay in hospital and thus reduces the cost of the treatment, morbidity and mortality. This newer surgical technique demands high skill and expertise.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 22156**

**NECK RECONSTRUCTION IN A PATHOLOGICAL FRACTURE NECK OF FEMUR: A NOBEL TREATMENT**

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A case of pathological fracture Neck of Femur in a 28 yrs male is presented with a nobel mode of treatment with excellent results. A 28 yrs male presented with pathological fracture neck of femur. X-ray and MRI showed large lytic lesion in neck and head of femur with complete loss of calcar and only 3-4 mm of subchondral bone was left in head. Arthroplasty could be a simple and straight option. We treated the patient with Curretage + autogenous bone grafting (cancellous & Ipsilateral fibular graft to reconstruct the calcar) +Artificial bone substitute(OSTIM) + Quadratus femoris muscle pedicle grafting +Fixation with two 6.5 mm CCS. Biopsy revealed Aneursmal bone cyst. Follow up show good incorporation of graft & excellent clinical outcome.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 22202**

**A NEW PROGNOSTIC CLASSIFICATION FOR DISPLACED FRACTURES OF THE FEMORAL NECK IN THE YOUNG**

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The complication rate following this fracture remains unacceptably high. We prospectively evaluated 27 patients with acute fracture neck femur preoperatively (xrays and CT) for posterior comminution and intraoperatively measured the intracapsular pressure(mm Hg) on the fractured and opposite side. All patients underwent closed reduction internal fixation and were followed up for minimum 1 year. Nonunion was identified on xrays and CT and AVN on bonescan. Of the 16 cases with pressure difference <30 (between the two sides), 1 (6%) developed AVN and 4 (25%) had nonunion. Of the 11 cases with pressure difference >30, 4 (36%) developed AVN and 5 (45%) had nonunion. Of the 13 cases with absent/mild posterior comminution, 1 (8%) had nonunion and 5 (38%) developed AVN. Of the 14 cases with moderate/severe posterior comminution, 7 (50%) had nonunion and 1 (7%) developed AVN. The p value for pressure difference >30 and AVN was 0.04 and that for nonunion was 0.52. The p value for moderate/severe posterior comminution and nonunion was 0.04 and that for AVN was 0.16. All 4 Gardens I/II fractures united without AVN. All 4 cases with unacceptable Gardens alignment index went into nonunion. Based on our results we propose a new prognostic classification for displaced fractures of the femoral neck. Grade A pressure difference <30 and absent/mild comminution good prognosis. Grade B pressure difference >30 or moderate/severe comminution intermediate prognosis. Grade C pressure difference >30 and moderate/severe comminution worst prognosis.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 22432**

**THE ASSESSMENT AND MANAGEMENT OF PATIENTS FALLING IN HOSPITAL SUSTAINING NECK OF FEMUR FRACTURES**

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Falls in the elderly are a major cause of morbidity and mortality. Falls assessment, and multi-factorial intervention may play a key role in improving outcome. This study aims to compare patients who fell within a hospital setting and those who fell outside of a hospital setting and sustained neck of femur (NOF) fractures. We aim to explore the aetiology, assessment and outcome of these injuries. This study was based in a teaching hospital with a dedicated NOF team. Data was collected over a six-month period. Two patients groups were defined; patients who had fallen in hospital and those who had fallen outside of the hospital setting. A range of data was collected and analysed using simple statistical methods. The results show that patients falling in hospital form a subgroup of the NOF population. They display higher numbers of co-morbidities (95% compared to 75% in the out-of-hospital group) making their assessment and management more complex, with fewer returning to their own home (5% compared to 40% in the out-of-hospital group) and higher mortality (twelve month mortality 60% compared to 25% in the out-of-hospital group). This study revealed deficiencies in the initial assessment of these patients. Falls in hospital are a major cause of morbidity and mortality often in patients with pre-existing medical complaints. Thorough assessment and multi-factorial modification of both patient and environmental factors may modify falls risk and potentially prevent falls, which could lead to savings both in mortality and cost.

**Poster**

**Session: Trauma - Hip**

**Abstract number: 22513**

**A MODIFIED SIDE PLATE DESIGN OF DHSNEW IMPLANT**

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INTRODUCTION: DHS being a gold standard implant has failure rate of 5-14%. There has been modifications in the past of DHS design to reduce implant failure rate viz. Medoff plates, TSP of AO are available in market. We present an implant with modification on the proximal portion of a barrel with a malleable trochanteric plate which is incorporated to the side plate thus to overcome the demerits of DHS & patented modifications of side plate. IMPLANT DESIGN: The barrel plate of DHS system is modified to apt greater trochanter. A cloverleaf shaped 5mm thick malleable trochanteric plate with 4 holes of 4.5mm diameter is built in to standard barrel plate junction as a single unit. It has an additional threaded hole below barrel. MATERIALS & METHODS: This design was studied for sliding mechanism & compression on saw bone. This implant has been used in 11 unstable intertrochanteric fractures while a comparison group of 10 cases had DHS with 4.5mm cancellous derotation screws in comparable age group. It has been also used in 4 non-union fracture neck femur cases along with bone grafts & valgus osteotomy as an extended indication. RESULTS: DHS with MTSBP showed compression of 8 - 10 mm at fracture site. Plate or screw did not show backing out or cut-out. In 4 non-union cases showed compression across site & stable fixation which went on for union. CONCLUSION: The major trochanteric fracture fragment are anchored by Malleable trochanteric extension of this design thus gives stability, prevent rotation, achieves better bony contact & union

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 20386**

**TREATMENT OPTIONS FOR PROXIMAL HUMERUS FRACTURES**

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This prospective study was undertaken to assess type of treatment options for various proximal humerus fractures patterns and thereby select ideal time for rehabilitation programme for a specific type of fracture, being treated by specific modality to get maximum benefit from treatment offered. Thirty patients treated operatively and followed up. Average follow-up was 2.5 years. Patients were followed post operatively at 2 weeks, 6 weeks, 10 weeks and then at 3-month intervals. Radiographs were assessed for fracture healing characteristics, changes in fracture alignment, and loose or broken hardware. The patients were functionally assessed with Neers point system. No fracture showed X-ray evidence of fracture malalignment. Out of 14 cases treated with cannulated cancellous screw 77% had good to excellent results. Four cases of plating had good to excellent results. Half (50%) cases treated with K-wires had poor results. Young patients had excellent end results. In patients with early mobilization (with in 2 weeks) post operative results were good to excellent.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 20808**

**OSTEOPOROTIC DIAPHYSEAL HUMERUS SHAFT FRACTURE WITH IATROGENIC INFECTED SOFT TISSUE DEFECT: AN INNOVATIVE METHOD OF MANAGEMENT**

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Osteoporotic fractures of humeral shaft are difficult to treat. The chances of union are less with both conservative and surgical method. We present a case report of a 55 year old man with Alzheimer's disease who presented with previously treated 4 days old fracture shaft of humerus. He was treated with closed reduction and plaster immobilization on post injury day 1 at a local clinic near his house. Four days later, he presented in our casualty with severe pain over the arm and high grade fever. His cast was slit and a bone deep soft tissue defect and pouring pus discharge was found at the fracture site. First Surgery done: The wound was lavaged & debrided and a temporary external fixator was applied. Post operatively, patient became disoriented and agitated. Due to concomitant osteoporosis and violent behaviour, the fixator pins became loose and came out. The wound was lavaged thoroughly after removing fixator and daily dressings were done. Final treatment done: Two long K wires (Ilizarov) were passed in the canal past the fracture site and compression achieved at the fracture site by bending one end and pulling & finally bending the other end. Post operatively, daily dressings were done, patient was rehabilitated well, nutritional and supportive medical care was instituted. Ultimately the wound healed completely and fracture united well by the end of 5 months. On reviewing the literature, no reference was found describing such a technique for a difficult situation like this.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 21233**

**ISOLATED INTERFRAGMENTARY COMPRESSION FOR DELAYED UNION OF HUMERAL**

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**INTRODUCTION:** The gold standard treatment for non-union of humeral shaft fracture is plating and cancellous bone grafting. This option is efficient but not absolutely safe. In case of initial treatment by nailing, a secondary compression of the fracture could be a solution. **MATERIALS AND METHOD:** Between 2000 and 2003, in a prospective study, out of 56 humeral shaft fractures treated by retrograde locking nail (UHN®), 4 (7%) had a delayed union (1 case) or a non-union (3 cases). This nail allows an optional compression of the fracture site with a specific device during the initial procedure. This device was used for secondary compression (as unique treatment) in 3 cases of non-union and 1 case of delayed union. **RESULTS:** The consolidation was obtained for 3 cases of non-union between 3 and 4 months. For the case of the delayed union, a perfect healing was also obtained after 3 months, but this patient has still sequelae of algodystrophy, as consequence of the first intervention. The average DASH score is 29,6/100 (extremes from 8,3 to 60,8). The average follow-up is 66 months (51 to 74). No complication per-or-postoperative occurred. There was no surgical approach of the fracture site, so, no risk of damage for the radial nerve, nor additional damage of blood supply. **DISCUSSION AND CONCLUSION:** In this series, secondary compression as isolated procedure allowed fracture healing, for 3 cases of non-union and one case of delayed union: this simple and safe procedure was efficient without changing method.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 21325**

**FRACTURES OF THE PROXIMAL HUMERUS TREATED WITH THE INTERLOCKING NAIL**

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**PURPOSE:** To evaluate the radiographic and clinical outcomes of patients with displaced proximal humerus fractures (two and three-part) treated with the interlocking nail, comparing their fractures types. **MATERIALS AND METHODS:** There were 22 cases. There were 10 surgical neck (SN) and 1 anatomical neck (AN) two-part fractures and 10 greater tuberosity/surgical neck (GT/SN) and 1 GT/AN three-part fractures. All patients were surgically treated solely with the interlocking nail using a closed technique. Functional assessment was obtained using the American Shoulder and Elbow Surgeons (ASES) score, which grade outcomes as excellent (>75), satisfactory (50-75), poor (<50). Radiographic outcome measurements included fracture alignment (neck-shaft angle), loosening of screw, fixation and hardware failure, and malunion and nonunion. **RESULTS:** Overall, the average ASES score was 80.2 (range 46.0 to 98.0). There were 15/22 (68.2%) excellent, 6/22 (27.3%) satisfactory, and 1/22 (4.5%) poor. All shoulders healed radiographically without evidence of avascular necrosis. When comparing patients with two-part fractures (n=11) with patients having three-part fractures (n=11), there were statistically significant differences with ASES outcome measures ( $p < 0.05$ ). But, there were no statistically significant differences in age-related analysis ( $p > 0.05$ ). **CONCLUSION:** Both displaced two-part fractures and three-part GT/SN fractures can have above satisfactory functional and radiographic outcomes with the interlocking nail using a closed technique. Even though displaced three-part GT/SN fractures in elderly osteopenic patients (>60 years), we can be treated satisfactorily with the interlocking nail.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 21487**

**PRONATION OF FOREARM PREVENT VARUS IN FRACTURES OF THE SHAFT OF HUMERUS**

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Most fractures of the shaft of the humerus are best treated by simple splintage. The most common deformity is varus at the fracture site due to malunion (Klennermann, 1966). Incidence of varus has been reported upto 49%. Four fresh cadavers were used to perform the experiments. The skin and fascia of the upper arm was excised by making a longitudinal and additional transverse incisions. The shaft of humerus was fractured using an osteotome and hammer or by angulating on the edge of the table. When we tried to reduce the fracture in supinated position of the forearm by flexing the elbow to 90 degree, it was not possible to hold the fracture reduced as it has a tendency to angulate laterally causing varus tilt of the distal fragment. This effect persisted even when the deltoid was cut. We could feel and see the tight triceps tendon acting as a bow string posteromedially. However, when the forearm was fully pronated the triceps along with olecranon process shifted laterally towards the center of the elbow and the fracture could be easily maintained in the reduced position. When we cut the triceps tendon, the fracture could easily be maintained reduced in supinated position of the forearm. This proved that eccentric compression by the stretched triceps tendon was the main deforming force producing varus tilt of the distal fragment. These findings were confirmed by treating 200 cases of humerus shaft fracture and taking X-rays in supinated and pronated position of forearm during fracture reduction.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 21652**

**BLUNT TRAUMA INJURY OF A SPECIAL FORMATION SOLDIER WITH MAJOR DEFECT TO THE BRACHIAL ARTERY, A FIVE YEAR FOLLOW-UP**

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Blunt injuries form around 10% of all injuries to the brachial artery. Large deficits attributed to blunt trauma are found infrequently to the extent that a maximum of about 3.5 cm has been thought to be the upper limit for this type of repair. A 29-year-old special formation soldier was injured when a moveable side of an Army truck collapsed creating lesion to the brachial artery with a defect in the artery of about 10 cm in length. The injury included a similar sized defect to one brachial vein however bone and neural injury were absent. Intraoperative Doppler ultrasonography was performed. A reverse autologous saphenous vein interposition graft with a circumference similar to that of the injured brachial artery was used to perform end-to-end anastomosis between artery and reversed vein graft. The patient returned to his military formation 16 days post operatively, with a return to full military calisthenics routine 2 months after injury. Surgical and Doppler ultrasonography control were kept regularly. Excellent late result revascularization of the injured brachial artery with reversed interposition vein graft can be seen in CT angiography five years after injury.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 21949**

**THE UNSTABLE OSTEOSYNTHESIS WITH FRACTURES DISTAL PART OF HUMERAL BONE**

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The treatment for full comminuted intraarticular fractures distal part of humeral bone in adults (type C in Muller's classification, 1985) is one of the most difficult and not completely solved problems of modern traumatology. Stable and functional osteosynthesis of this pathology, which is recognized by the majority of the world traumatologists, is not always possible. We have studied long-term results of treatment 33 patients with fractures distal part of humeral bone (type C in Muller's classification, 1985), whom unstable osteosynthesis fragments with spokes or spokes in combination with screws and the method of decompression of the elbow joint was made during 2000-2007 period. In cases, when it was impossible to ensure stable and functional osteosynthesis, decompression of the elbow joint was appended to unstable osteosynthesis. Decompression of the elbow joint consists of desinsertion of tendons from the bone attachment points on the epicondyles of humerus with the following transposition of these tendons up to 1 cm more distal and fixation to the soft tissues (excluding transosseous fixation). Excellent long-term results of treatment obtained in 10 cases (30,3%), good in 15 (45,5%), satisfactory in 6 (18,2%), bad in 2 (6,0%). So, the decompression of the elbow joint makes possible to simplify the anatomical reposition of broken ends, to decrease the mutual compression of articulate surfaces, to improve the restoration of motion amplitude after prolonged immobilization period.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 22101**

**ALTERNATIVE STRATEGIES IN THE TREATMENT OF HUMERAL DIAPHYSEAL FRACTURES: THE ROLE OF EXTERNAL FIXATION**

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The aim of the study is to evaluate the results of the treatment using external fixation for humeral diaphyseal fractures illustrating results and complications in comparison with other methods commonly applied. MATERIALS AND METHODS: In this study, 84 consecutive patients with humeral diaphyseal fracture were treated with external fixator (Hoffmann II) in the period August 1995-March 2007. The average follow up period was 25 months. The clinic evaluation was performed with two separate scoring systems i.e Constant score for the shoulder and Mayo Clinic Elbow Index. Radiographic evaluation of consolidation was decided in presence of 4 cortex callus formation. RESULTS: All fractures went to consolidation during 1 year and 93% within 6 months. The average Constant score at follow up was 86 (range 34-100), in 67 cases the score was more than 80. We obtained in our group excellent result in 54.6% of cases, good results in 25%, fair in 13.6% and poor in 6.8%. The average Mayo elbow index has been 95 (range 55-100), with only 4 cases with score less than 74. The final results considering the elbow were excellent in 81.8% of cases, good results in 13.6%, fair in 2.3% and poor in 2.3%. The ROM evaluation considering shoulder and elbow was excellent in 86.4% of cases.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 22331**

**SUPRA-SUPRACONDYLAR FRACTURES OF HUMERUS IN CHILDRENS: ARE THEY DIFFERENT FROM SUPRACONDYLAR FRACTURES?**

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**BACKGROUND:** Metaphyseal-diaphyseal junction fractures of the distal humerus had not been well recognized just before a recent report published in the literature regarding the fracture pattern in this region. The purpose of this study is to review our experience with this uncommon fracture. **MATERIALS AND METHODS:** A retrospective review of medical records and radiographs of pediatric elbow fractures from 2001 to 2005 revealed 187 supracondylar fractures that had been treated at our institute. Out of these, five fractures were identified to be at the metaphyseal-diaphyseal junction just proximal to the olecranon fossa, which was renamed as supra-supracondylar fracture. Clinical data of patient age, neurovascular status of the affected limb, mechanism of injury, mode of treatment and ultimate clinical outcome were collected for the study. **RESULTS:** In 2 patients, the fracture line was oblique (group A), and the rest 3 patients had comminuted type fracture pattern (group B). Average age at the time of fracture was 4.6 years (range, 2-7 years). All patients had been treated by closed reduction and immobilization in cast. Records revealed at least 1-year follow-up of these patients showing complete remodeling of the fracture and normal functional outcome. **CONCLUSION:** Metaphyseal-diaphyseal junction fractures of the distal humerus in children are uncommon injuries that should be differentiated from the more common supracondylar humerus fracture for optimal outcomes. These fractures can be managed conservatively particularly when it is oblique and comminuted types. **KEYWORDS:** Supra-supracondylar fracture, metaphysio-diaphyseal junction fracture of humerus, supracondylar fracture

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 22364**

**ARM-WRESTLING AND DIAPHYSEAL HUMERAL FRACTURE - AN UNCOMMON ASSOCIATION**

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In a five month period (january-may 2008) we examined a series of 4 cases of distal humeral fractures produced by an uncommon mechanism - arm wrestling. All the four patients were males (19 to 28 year old), rather fit (Body Mass Index 24-26 kg/m<sup>2</sup>). All the fractures were produced in the night time and all but one of our patients had elevated alcohol serum levels (range 0,097-0,068 g%). All fractures were involving the right arm. There was no radial nerve palsy. The pattern of fracture was similar at about 14 cm above the biepicondylar line, wedge shaped and detaching a butterfly fragment from the medial cortex (12-B1.3 / AO), pattern that suggested torsional force mechanism. One of our patients was treated by closed reduction and plaster splint immobilization, one patient received ORIF using a posterior applied DCP, and two were treated by indirect reduction and anterior MIPO. All fractures healed. There was no vascular or neurological complications. From a review of all the literature on the subject resulted that this is an unusual injury occurring in arm wrestlers. With the elbow caught in a flexed position the shoulder is actively internally rotated producing a torque force that fractures the humeral shaft in its less resistant region, the distal third. In our patients, we assume that the alcohol consumption determined the reduction of active neurological muscle control and in association with the muscular physical constitution determined an effort that produced an exceeding force across the humeral diaphysis.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 22434**

**HUMERAL SHAFT FRACTURES - DON'T GET DISTRACTED!**

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This audit aimed to identify causes for a suspected high non union rate in those humeral shaft fractures treated conservatively. METHODS: Patients were identified through a manual search of the operating theatre register and all plaster room forms for the period 1/1/02 - 31/12/05. Patient files and radiographs were then examined for factors that might influence rate of non-union. RESULTS: 45 fractures were identified in 44 patients. 28 of these were treated conservatively with a hanging cast and functional brace. Of these, 11 (39.6%) went onto non-union requiring ORIF + bone grafting. There was a strong correlation between the length of time spent in the hanging cast and a high rate of non-union. The average length of time spent in cast for the non-union group was 48 days as opposed to 30.9 days in the group that went onto unite ( $p=0.0601$ ). There was a statistically significant correlation between non-union and the radiographic degree of distraction at the time of first application of hanging cast ( $p=0.016$ ) and also at the six week check ( $p=0.001$ ). Other factors associated with a poor outcome were the degree of varus angulation at presentation ( $p=0.0078$ ). Subsequent application of lightweight hanging cast and early conversion to functional brace decreased the non-union rate to 4.7%. CONCLUSIONS: Our high rate of non-union is associated with a high degree of distraction at time of first application of hanging cast and an extended period of time spent in cast.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 22445**

**TREATMENT OF PROXIMAL HUMERAL FRACTURES WITH ANGULAR-STABLE PLATE**

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**MATERIALS AND METHODS:** For a period of 2 years 47 patients (29 females and 18 males) with proximal humeral fractures were treated surgically with angular-stable plate and followed-up in our two institutions. The mean age was 52 years, the mean follow-up was 10 months. According to the classification of Neer the distribution was: 6 two-fragment, 13 three-fragment, 21 four-fragment and 7 fractures-dislocations. According to the AO classification 6 fractures were A-type, 11 B-type and 30 were C-type. We treated two open fractures (Gustillo-Anderson gr. II), as well two patients with neurological deficit. In all 47 cases we performed surgery using the anterior approach and applying the S3 angular-stable plate (Hand Innovation, DePuy). Additional fixation of the tubercles using nonresorbable sutures was performed, when needed. We performed the surgery on the average the 5-th day after the trauma, the mean duration was 78 min, the blood loss – 300 to 700 ml. **RESULTS:** We observed bone union in 46 patients. The final functional result according the Constant-Murley Scale was: good and excellent in 39 cases, average in 7 patients and bad in one. We observed the following complications: one deep infection, one axillar palsy, one loss of correction, one nonunion, 3 cases of screw protrusion into the joint, 4 cases of avascular necrosis of the humeral head. **CONCLUSION:** The angular-stable plate provides adequate fixation, permitting early restoration of joint motion.

**Poster**

**Session: Trauma - Humerus**

**Abstract number: 22532**

**RETROGRADE 'HALDER' HUMERAL NAIL FOR TREATING DISPLACED THREE PART PROXIMAL HUMERAL FRACTURES**

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**AIM:** The aim of this study was to analyse the results of the displaced three part fractures of the proximal humerus treated by retrograde nailing +/- cannulated screws for fixation of greater tuberosity. **MATERIAL AND METHODS:** Displaced three part fractures of the humerus are unstable and difficult to fix. Different methods of operative treatment available for this type of fractures are Kirschner wires, tension band wiring, intramedullary nailing, hemiarthroplasty and most commonly used procedure open reduction and internal fixation with plate and screws. The Halder Humeral nail was introduced through the olecranon fossa into head of humerus, to stabilise the neck of humerus fracture. Displaced greater tuberosity was reduced with minimal stab incision and fixed with cannulated screws. Compared to other open procedures very minimal proximal exposure was required to fix the greater tuberosity. Since January 1995, we have operated 107 patients with displaced three part proximal humerus fractures. 81 patients were treated with proximal screws and 26 (24.29%) patients were treated without proximal screw fixation. Total females were 62 and males 15. Average age was 67.68 years. **RESULTS:** Early passive movements were encouraged in the shoulder. The pain was relieved in almost all patients. In 87 fractures united well. 15 patients had malunion, 3 had head collapse and 2 had AVN humeral head. **CONCLUSION:** In our experience, displaced three part proximal humeral fractures can be treated with this nail in retrograde method which avoids any major exposure in the shoulder region.

**Poster**

**Session: Trauma - Knee**

**Abstract number: 20732**

**SURGICAL TREATMENT OF FLOATING JOINTS**

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**PURPOSE:** Floating Knee and Elbow injuries are complex injuries. The types of fractures, soft tissue and associated injuries make this a challenging problem to manage. We present the outcome of these injuries after surgical management. **MATERIALS & METHODS:** 2 patients with floating knee injuries (classified by Blake and McBryde) and 1 patient with floating elbow injuries were managed over an average of 22 months. Both fractures of the floating knee injury and the three fractures of the elbow injury were surgically fixed using different modalities. The associated injuries were managed appropriately. Assessment of the end result used the Karlström criteria after bony union. **RESULTS:** Mechanism of injury was road traffic accidents in 2 patients (floating knee) and falling from height for 1 patient (floating elbow). Patient 1 was TipIIA, patient 2 was TipIIB. Both these patients had intramedullary nailing for femur fractures. Patient 1 had ilizarov external fixation for segmenter tibia fractures, patient 2 had a proximal medial plate for proximal tibia fracture. Patient 3 had plates a fixed to all fractures. Complications were knee stiffness and delayed union of femur in a patient. The bony union time average from 32 weeks for femur fractures, 18 weeks for tibia, 12 weeks for upper extremities. According to the Karlstom criteria the end results was acceptable. The average elbow score was good. **CONCLUSIONS:** The associated injuries and the types of fractures (open, intra-articular, comminution, nerve damage) are prognostic indicators in floating joint injuries. Postoperative rehabilitation are necessary for good final outcomes.

**Poster**

**Session: Trauma - Knee**

**Abstract number: 20733**

**TREATMENT OF THE EXTRAARTICULAR KNEE ARTHROFIBROSIS AFTER FEMORAL DIAPHYSEAL FRACTURE**

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**PURPOSE:** Lack of knee flexion is a possible complication in severe femur fractures. Two different techniques for the treatment of this problem were applied. **MATERIALS-METHODS:** From 2006 to 2008, 3 patients with severely arthrofibrotic knees were managed with two different operative techniques. The mean age of the patients at the time of the operation was 45 years. We recorded the clinical outcome of 1 patient using Judet quadricepsplasty with a follow-up of 28 months, and of 2 patients using extra-articular mini-invasive quadricepsplasty and intra-articular arthroscopic lysis of adhesions during the same anesthesia session with a mean follow-up of 14 months. All patients were evaluated according to the criteria of Judet and The Hospital for Special Surgery knee-rating system. **RESULTS:** The average maximum degree of flexion increased from 33 degrees preoperatively to 65 degrees at the time of the most recent follow-up. According to the criteria of Judet, the result was good for 2 knees, and fair for one. The average Hospital for Special Surgery knee score improved from 48 points preoperatively to 58 points at the time of the most recent follow-up. A superficial wound infection occurred in one patient. **CONCLUSIONS:** If you select the appropriate cases, the Judet procedure and mini-invasive operation for the severely arthrofibrotic knee can be used to increase the range of motion and enhance functional outcome.

**Poster**

**Session: Trauma - Knee**

**Abstract number: 20844**

**STAGED MANAGEMENT OF COMPLEX TIBIAL PLATEAU FRACTURES USING REVERSE SLIDING PLATE TECHNIQUE**

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Magnitude of soft tissue injury associated with supposedly closed high energy proximal tibial fractures is difficult to assess in the initial evaluation. Complications have been reported even with minimally invasive techniques. We report a staged technique for management of these high energy fractures. We treated 20 closed high energy tibial plateau fractures (Schatzker types V and VI) using the staged technique at our institute from January 2007 to June 2007. Traction films and CT were taken as part of pre operative evaluation. Fractures demonstrating good articular reduction (step off < 2mm) without significant impaction (> 3 mm) in traction films were considered for reverse sliding technique after settling of soft tissues during which time articular reduction was maintained by a knee spanning external fixator frame. Union was achieved in all patients at a mean time of 11 weeks. Articular reduction was deemed anatomical in 17 patients (step off < 2mm) and articular impaction (< 3 mm). There were no incidences of deep infection. One patient required a fasciotomy and graft closure. 2 patients required further surgeries for ligament reconstruction. The average time spent on the fixator was 5 days (3 - 12 days). All patients had an excellent functional outcome at one year follow up. The staged protocol of management allows soft tissue healing and surgical stabilisation through a healthy soft tissue cover. Reverse sliding technique further minimizes the soft tissue injury at the fracture site compared with the conventional technique. Careful selection of cases is necessary to achieve successful outcome with this technique.

**Poster**

**Session: Trauma - Knee**

**Abstract number: 21583**

**THE ASPECTS OF OSTEOARTHRITIS PREVENTION AFTER INTRAARTICULAR PROXIMAL TIBIA FRACTURES**

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We have observed a 10-year experience of operative treatment of 202 patients with tibial plateau fractures. The major factors which lead to posttraumatic osteoarthritis were revealed: valgus and varus malalignment; instability; articular incongruity; prolonged immobilization; and secondary displacement of intraarticular fragments. For the prevention of osteoarthritis we performed thorough reduction using internal or external fixation and bone grafting to achieve early functional treatment. In postoperative period major importance was given to early kinezotherapy and controlled weight-bearing. The following original methods have been used: brephobone grafting; the use of apparatus with balance weight for postoperative kinezotherapy; a device for precision measurement of angle deformity in the knee joint; dynamic radiometry and the method of weight-bearing control. The average follow-up was 46 months (24 to 74) and the results were evaluated by clinical and roentgenographical examination. Radiological changes were graded according to Kellgren and Lawrence. The clinical outcome was assessed by subjective evaluation of the knee joint based on the principles of KOOS score. The radiological symptoms of osteoarthritis, clinical signs and KOOS values have been improved by application of our original methods.

**Poster**

**Session: Trauma - Knee**

**Abstract number: 21704**

**KNEE INJURY EVALUATION AND ASSESSMENT IN EMERGENCY DEPARTMENT**

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Knee injury may be the result of trauma, overuse or systemic disease. Medical history and physical examination of the knee appropriate imaging studies and arthrocentesis establish the correct diagnosis and treatment. MATERIAL: Retrospective study for three military hospital in the Kingdom 2,000,000,00 visit to these hospitals from February 2003 to February 2005. 8000 patient were seen for knee complain, 5000 patient were having trauma to the knee, inclusion criteria are trauma to the knee, all age both sex Exclusion of all non traumatic injury. The patient will be seen and evaluated. RESULT: This study shows the majority of the patient were 80% male and 20% female, commonest injury in male group due to sport while for female inside house activity, 200 patient had open knee injury went for surgery 1350 patient went for further radiological investigation that shows torn ACL with mensical injury in 980 patients, 14 patient had Knee dislocation; 4 of them associated with vascular involvement, 10 of them had compartment syndrome. DISCUSSION: Physicians are increasingly being called on to evaluate musculoskeletal disorders. The knee is susceptible to traumatic injury and is often the site of systemic disease. The appropriate use of manual testing, diagnostic imaging studies and arthrocentesis can further assist in our study were looking for this type of injury and it affect related that to the age group and type of sport that involve.

**Poster**

**Session: Trauma - Knee**

**Abstract number: 21708**

**MINIMALLY INVASIVE PERCUTANEOUS PLATING FOR TIBIAL PLATEAU FRACTURES**

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Operative management of fractures involving the tibial plateau is a controversial subject. Open reduction and internal fixation is often complicated by soft-tissue concerns. In this article, we describe a percutaneous surgical technique in which a 4.5-mm T buttress plate is used for osteosynthesis of tibial plateau. Use of this minimally invasive technique reduces soft-tissue dissection and thereby decreases risk for soft-tissue infection or slough while preventing medial column collapse and varus deformity of the knee. We conclude that tibial plateau fractures treated by percutaneous plating is technically easy, achieves satisfactory reduction, fixation, and fracture healing. This novel method of internal fixation is a simple and economic method for the management of tibial plateau fractures and can be safely practised by an orthopaedic surgeon at a District General Hospital.

**Poster**

**Session: Trauma - Knee**

**Abstract number: 21785**

**MINIMAL INVASIVE OSTEOSYNTHESIS USING RAFT CONFIGURATION OF CORTICAL SCREWS NEAR SUBCHONDRAL BONE FOR MANAGEMENT OF FRACTURE LATERAL CONDYLE TIBIA**

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**INTRODUCTION:** In today's world of high speed and vehicle related accidents it is common fracture seen. **METHODS:** 40 patients were treated for fracture lateral condyle tibia and followed up for average of 37 months. Evaluation was done with Antero-Posterior and Lateral view X-ray of the full length tibia and fibula with knee joint. In some cases 3d scans were done for better understanding of the fracture pattern. Surgical technique includes closed reduction and percutaneous fixation or Open reduction and fixation with or without bone graft using cortical screws arranged in a raft configuration near subchondral bone. Post operative Motion knee brace was given and non weight bearing was advised till radiological signs of union. Knee bending started at 2nd day. Rasmussens 30 point clinical grading system along with radiological score was used for evaluation with 2 year follow up. **RESULTS:** Clinically excellent result seen in 19 cases, 20 cases good and 1 case result was fair. The mean Rasmussens clinical score was 25.47. Union was obtained in all. Using radiological grading 12 cases had excellent results and rest 28 cases had good results. Mean score was 15. Average time of union was 11 weeks. **CONCLUSION:** We have used minimal invasive technique with less soft tissue damage so that post-operative recovery time is reduced. Literature shows raft configuration of cortical screws give a strong construct which is evident from our study. In management accurate, reduction, restoration of the articulating surface as well as the handling of the soft tissue are critical to a successful treatment outcome.

**Poster**

**Session: Trauma - Knee**

**Abstract number: 21789**

**MANAGEMENT OF HIGH-ENERGY TIBIAL PLATEAU FRACTURES BY LIGAMENTOTAXIS USING SMALL WIRE RING FIXATOR**

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**BACKGROUND:** To assess the results of small wire external fixation as ligamentotaxis in high energy tibial plateau fractures. **METHODS:** Between January 2005 and January 2007, 32 consecutive patients aged 21 to 65 years, underwent small wire external fixation for high energy tibial plateau fractures. 15 involved the right and 17 patients involved the left. 28 injuries were closed and 4 injuries were open. Fractures were classified according to Schatzkar staging system. After a minimum of two year follow-up each affected knee was evaluated using Rasmussens (1) 30 point clinical grading system, and (2) Radiological evaluation. **RESULTS:** There were 14 type V fracture and 18 type VI fractures. Complications consists of 4 superficial pin tract infections, 3 deep pin tract infections and one cut through of wire. The mean range of knee movement was 130°. The mean Rasmussen Radiological score was 14 (Range 10-18): excellent in 6, good in 20 and fair in 6. The mean Rasmussen functional score was 26 (Range 17-30): excellent in 18, good in 10 and fair in 4. **CONCLUSION:** This technique gives good method of treatment of high energy tibial plateau fractures, allowing anatomical reconstruction of the articular surface, usually preserving the biology. It also gives stable fixation, allows early movements of the joint, without high rate of complications.

**Poster**

**Session: Trauma - Knee**

**Abstract number: 22481**

**DISPLACED TIBIAL SHAFT FRACTURES: THE TRUE COST OF TREATMENT BORNE BY THE PATIENT!**

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**BACKGROUND:** Although cast bracing has been a well established method of treating tibial shaft fractures, the majority of the recent literature has advocated intramedullary nailing. As a result, surgeons in countries with scarce resources are less confident in opting for non-operative treatment. This study compares two modalities of treating displaced tibial shaft fractures in the scenario of a developing world. **MATERIAL AND METHOD:** 68 consecutive patients were alternately treated with cast bracing(CB) or intramedullary nailing(IMN) for closed displaced and Grade 1 open-tibial shaft fractures. The groups were comparable for age, gender, BMI and follow-up (mean: 4.3 years). **RESULTS:** IMN group had shorter time to fracture union (mean 19 versus 22 weeks for CB), lesser time off-work, less leg shortening and less residual angulations in coronal and sagittal planes. However, CB group had no deep infections compared to 6% in the IMN group and had a significantly reduced hospital stay. The most significant difference was the cost of hospital treatment which was less than half in the CB group compared to the IMN group(mean USD 831 versus USD 2071,  $p < 0.001$ ) **CONCLUSION:** Although IMN gives superior results when treating tibial shaft fractures on the whole, the CB method of treatment is also not a bad option. The average time to union is not much different and there is an added advantage of no infection risk. More importantly, the true cost of treatment which is often borne by the patient in the developing countries is significantly less with CB.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 19872**

**OPEN REDUCTION AND INTERNAL FIXATION OF FOUR-PART FRACTURE DISLOCATIONS OF THE PROXIMAL HUMERUS IN PATIENTS YOUNGER THAN FORTY YEARS**

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**SUMMARY OF BACKGROUND DATA:** Four- part fracture dislocations are severe complex injuries especially in the young population. Although several techniques were suggested to manage these difficult fractures, the risk of avascular necrosis is high; consequently, humeral head arthroplasty has been most commonly advocated. **OBJECTIVE:** To study the results of salvage of the humeral head with open reduction and internal fixation; analyzing its clinical and radiographic outcome. **PATIENTS AND METHODS:** Twelve patients younger than forty years of age with high energy injuries of the shoulder that led to four- part fracture dislocations were treated with open reduction and internal fixation with a proximal humeral plate. Five patients had an anterior fracture dislocation and seven patients had a posterior fracture dislocation. We assessed the results clinically by using the Constant score and radiographically by evaluating fracture union and the incidence of avascular necrosis. **RESULTS:** The average Constant score was 75 after 1 year. All patients fully united. Complications were limited including three patients who developed avascular necrosis of the humeral head which did not impair the functional result. **CONCLUSION:** The results are encouraging and favor salvage of the head in this young age group. Every attempt to fix four part fracture dislocations in young patients should be attempted.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 20169**

**AXILLARY VEIN THROMBOSIS FOLLOWING LATERAL CLAVICLE FRACTURE - AN ILLUSTRATIVE CASE REPORT**

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Axillary vein thrombosis is an uncommon complication of clavicle fracture; only two reports have previously appeared in the literature. Upper limb deep vein thrombosis may give rise to pulmonary embolism in up to twenty percent of cases and can cause superior vena cava obstruction. The condition manifests with superficial clinical signs, an appropriate level of suspicion permits that relevant patients be earmarked and investigated. Imaging of axillary vein thrombosis is usually by ultrasound or digital subtraction venography. When the aetiology is trauma the regional anatomy is distorted and ultrasound views may be limited, it is also desirable to exclude a haematoma compressing the vessel; the diagnosis can be made by computed tomography (CT) venogram. Following a fall from a bicycle a forty eight year old man sustained a lateral clavicle fracture. He was treated with a collar and cuff; pendular movements are permitted but nothing further. At a three week follow up appointment it was noted that his arm had become swollen and congested over the preceding week. CT venogram illustrated the thrombus and following liaison with the vascular surgeons the patient was admitted for heparin anticoagulation whilst being warfarinised. The patient made an uneventful recovery. We illustrate this case with photographs and 3D colour reconstructions of CT venography to raise awareness of the condition. A suitable level of clinical suspicion should be maintained by the orthopaedic surgeon; delayed arm swelling with venous congestion following clavicle fracture should be investigated with CT venogram and thrombophilia should be excluded.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 20547**

**MANAGEMENT OF TRAUMATIC RECURRENT ANTERIOR DISLOCATION OF GLENO-HUMERAL JOINT BY BOYTCHEV'S METHOD**

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**OBJECTIVE:** To assess the clinical and functional outcome of patients with Traumatic Anterior Recurrent dislocation of Shoulder treated by Boytchev's method. **MATERIALS AND METHODS:** 29 patients with the condition were treated by Boytchev's method and the functional outcome was assessed. **RESULTS:** 95.2% the patients showed excellent to good results and 4.8% showed fair results according the Rowe's scoring. **CONCLUSION:** Cost effective method with excellent functional outcome with not a steep learning curve. Ideal method for the public health programmes.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 20825**

**OPERATIVE OUTCOMES OF DISPLACED MID SHAFT FRACTURE CLAVICLE**

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Clavicle fracture account for about 44% of all adult fracture around the shoulder, although non-operative care results in high union rates for most, surgery is indicated in particular if displacement and/ or shortening greater than 15-20 mm in young, active individual to yield the best clinical results in terms of alignment, union and early mobilisation. We did a retrospective audit to define the guidelines for admission, safer surgical approach and functional outcome using oxford score for the period Jan 2002-Jan 2007. This included 35pts, with Female: male ratio 1:2.5, Right, just over 50%were manual labours. Most common indication for surgery was displacement/shortening Direct incision was used in 14pts and infraclavicular incision in 21pts. Radiological union was seen in all pts on average 13.26 weeks. 10 patients had minor complications, 28% with direct incision and 19% with infraclavicular approach .29 patients went back to original work by 2.55 month, 5 excluded as 3 were at school, 2 unemployed and 1 did not mention. All patients had an oxford score of 12-20, showing satisfactory joint function. Metal work was removed in 6 patients. CONCLUSION: Our study included 35 patients, union were achieved in all with good functional results. 34 patients express to recommend surgical fixation to others. Infraclavicular approach was associated with less complication and less metal work removal.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 20842**

**PERCUTANEOUS LOCKED PLATING OF COMPLEX PROXIMAL HUMERUS FRACTURES**

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**INTRODUCTION:** Recent literature suggests that fractures of the proximal humerus are conventionally treated either by percutaneous methods or by open locked plating. We describe a technique that combines the benefits of both closed and open techniques to allow a closed reduction of the fracture respecting the biology and a percutaneous plate osteosynthesis resulting in a stable mechanical construct to enable faster recovery. **PATIENTS AND METHODS:** 15 consecutive patients with a 3 or 4 part fracture of the proximal humerus were treated at our institution from (January 2007 - November 2007) using a minimally invasive technique using PHILOS system. The fractures were reduced under image intensifier and temporarily fixed with K wires. This was followed by plate fixation through two small lateral incisions over the deltoid taking care to avoid the axillary nerve. **RESULTS:** The average surgical time was 46 minutes (35 - 60 minutes). The average blood loss was 120 ml (80 - 150 ml). The average fluoroscopy exposure was 60 seconds (40 - 100 seconds). There were no incidences of axillary nerve palsy. Reduction was deemed anatomical in 12 patients. In three patients there was a residual varus of 15 degrees (10 - 20 degrees). The shoulder function at one year follow up was excellent. **CONCLUSION:** Though the shoulder joint can compensate less anatomical reductions with its wide range of movements, stable fixation is necessary to allow early mobilization and expedite recovery. Locked plating through a minimally invasive technique avoids the surgical morbidity associated with the conventional open approach and gives excellent functional outcome.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 21033**

**INTRAMEDULLARY NAILING IN CLAVICULAR DIAPHYSEAL FRACTURES: OUR EXPERIENCE IN 30 CASES**

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Clavicle is a 'S' shaped bone. It protects brachial plexus, acts as a strut which provides the only bony connection b/w upper limb and thorax. Fractures of the clavicle are common in high speed injuries, females, older patients, smokers. The commonest site is in mid third. Conservative method and plating has their set of disadvantages. Non union, brachial plexus irritation, shortening and restriction of shoulder function are few complications of conservative method. While, on the other hand, lengthy procedure, cosmetic problem, extensive periosteal stripping, higher incidence of non unions and rarely vascular injuries may complicate plating technique. We present our experience of intramedullary nailing in diaphyseal clavicular fractures in 30 carefully selected cases. General anaesthesia was used and surgery performed in 'Beach chair' position. Procedure was done under fluoroscopic guidance. The total duration of follow up was 1 year. Union was seen in 26/30 cases and rest four went into delayed union. No case developed non union or deep infection.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 21283**

**DISTAL CLAVICLE FRACTURES: TREATMENT WITH THE DISTAL RADIUS LOCKING PLATE**

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**INTRODUCTION:** Non-operative treatment of lateral clavicle fractures presents a difficult problem. A high incidence of non-union, residual pain and shoulder girdle instability has been reported. A variety of fixation techniques have been described but the complication rates of these procedures can be high. This retrospective review describes the use of distal radius locking plates for fixation of lateral unstable clavicle fractures. **MATERIAL/METHODS:** From January 2006 until December 2007 23 patients (17 males, 5 females; mean age 31 yrs (12-70)) presented to our service. 2 patients sustained type 1, 16 patients type 2, 2 patients type 4 and 3 patients type 5 fractures (Neer classification). Patients were reviewed clinically, radiographically and with Constant score assessment. **RESULTS:** Union was achieved at a mean follow up of 7.2 weeks. The mean Constant score at 6 months was 84, the mean DASH score 27.7. The following complications were seen during the follow-up period: 1 superficial infection settling with oral antibiotics and 1 non-union in a type 5 fracture requiring bone grafting. **DISCUSSION:** Clavicle fractures of the lateral aspect are controversial. The mechanism of injury often results in ruptures of the adjacent coracoclavicular ligaments and create instability and increased motion between the proximal and distal fragment. The result of this serie of cases is encouraging and we recommend the use of distal radius locking plates to treat unstable lateral clavicle fractures. However a larger study is needed to further evaluate mid- and long-term shoulder function.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 21430**

**NERVE TRANSFER FOR WINGED SCAPULA IN C5 AND C6 BRACHIAL PLEXUS ROOT AVULSIONS: AN ANATOMIC STUDY AND A REPORT OF FIVE CASES**

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**PURPOSE:** To report the anatomic feasibility and results of nerve transfer to the serratus anterior muscle using one branch of the thoracodorsal nerve for winged scapula in C5 and C6 brachial plexus avulsion. **METHODS:** The anatomical study was performed on ten fresh cadavers. The length and histomorphometric evaluation of the thoracodorsal nerve and the long thoracic nerve were performed. Five patients with loss of shoulder abduction due to upper brachial plexus injuries and with winged scapula had nerve transfer using 1 branch (1 medial and 4 lateral) of the thoracodorsal nerve to the long thoracic nerve. The follow-up period ranged from 24 to 33 months (mean, 28 months). **RESULTS:** The length and the average number of axon fibers in the lateral branch, the medial branch of the thoracodorsal nerve and the long thoracic nerve supported the transfer of one branch of the thoracodorsal nerve to the long thoracic nerve. All patients recovered serratus anterior muscle function. Two patients had no winged scapula, whereas 3 patients had mild winged scapula after the surgery at the last follow-up evaluation. **CONCLUSIONS:** The anatomic study with five cases supported that nerve transfer to the long thoracic nerve using one branch of the thoracodorsal nerve ensured adequate return function of the serratus anterior muscle by decreasing or correcting winged scapula in upper brachial plexus injury.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 22146**

**BILATERAL FRACTURE OF THE CLAVICLE - A CASE REPORT**

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**BACKGROUND:** Bilateral fracture of the clavicle although very rare invariably are due to compression of both the shoulders towards each other or by direct trauma. Association of chest injury is very high with bilateral clavicle fracture. Conventional non operative measures may not give satisfactory outcome in this situation. **CASE DESCRIPTION:** A 35 year male presented after road side accident with pain swelling and deformity in both clavicular region, Radiological examination revealed fracture of bilateral clavicle, there was no associated chest injury. Treatment was done by open reduction and internal fixation by 3.5 mm reconstruction locking plates. Patient showed good recovery in post operative period and early return to full function. **CONCLUSION:** Case report suggests that bilateral fracture clavicle treated with primary open reduction and internal fixation with locking plates gives good results.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 22221**

**PECULIARITIES OF THE SURGICAL TREATMENT IN NEGLECTED ANTERIOR SHOULDER DISLOCATIONS**

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AIM OF THE WORK: To study the peculiarities of the surgical treatment in neglected anterior shoulder dislocations. MATERIALS AND METHODS: The outcomes of treatment of 20 patients during the period from 2000 to 2005 have been analysed, the mean age was 54 yo (36-72 yo), the mean duration of dislocation was 8 weeks (from 4 to 16 weeks). Clinical, X-ray examination and CT methods were used. RESULTS: Fibrotic changes in posterior compartments of capsule were present in 90% of patients, tissue ossification in 60 %, fractured greater tubercle in 45%. Impressed fractures of the humerus head type 3 by Rowe were seen in 35%, of glenoid cavity in 10%, SLAP-damage type IV in 10%, paralysis of n. axillaries in 10%. In all cases, the open reduction was performed. Capsulotomy in posterior compartment has been performed in 15 patients (75%), in 9 cases (45%) osteosynthesis of greater tubercle has been done. In 3 cases (15%), the ossificate was removed, in 1 case the resection of an artery segment of 1.5 cm using end-to-end suturing was required. In 2 cases, rotation shoulder osteotomy was performed. In 2 patients having SLAP-damage type IV, the reinsertion of cartilaginous lip has been carried out. CONCLUSION: 1. Open reduction of neglected shoulder dislocation in 80% of cases is associated with correcting concomitant damage and taking measures for preventing joint instability. 2. Preoperative investigation in neglected shoulder dislocations should be aimed at detecting concomitant damage.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 22231**

**PATHOGENETIC METHOD OF ANTERIOR SHOULDER DISLOCATION REPOSITION WITH HILL-SSACH'S LESION**

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About 10% of anterior shoulder traumatic dislocations are combined with depressed fracture of humeral head posterior pole. The major obstacle for dislocation reposition in this case is humeral head impaction to leading edge of glenoid cavity of scapula. This is not taken into consideration in widely known and applicable techniques of Kocher, Hippocrates, Mukhin, etc. **MATERIALS AND METHODS:** Our introduced method of reposition. Anesthesia intravenous or endotracheal anesthetic with muscles relaxation. Patient is in supine position. Assistant fixes the shoulder by diaper placed under patients' armpit. Surgeon takes supracondylar area of the injured arm and its forearm lower third, arm is in the trunk axis. Reposition starts when surgeon straightens the shoulder displacing the elbow back from trunk line, while assistant pulls diaper placed in shoulder upper third cephalad and volar. This movement leads to wedged-in surfaces isolation. Then surgeon carries out internal shoulder rotation, countertraction direction cephalad, volar and slightly ectad. Complete absence of force during this manipulation indicates wedged-in surfaces isolation. Synchronously with this manipulation the shoulder is taken to anterior deviation position. Five conservatively irreducible by traditional methods shoulder dislocations were closely reduced by described means. Follow-ups were observed in period from 6 up to 36 months (23 months at an average). There was no recurrence of dislocation in all cases, all the patients evaluated results as good and satisfactory. **CONCLUSION:** Atraumatic reposition of anterior shoulder dislocation with humeral head impaction to leading edge of glenoid cavity of scapula is achieved by introduced «extension» means.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 22431**

**BILATERAL ANTERIOR GLENOHUMERAL DISLOCATION FOLLOWING A SEIZURE**

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**INTRODUCTION:** Bilateral dislocation of the shoulders is an uncommon event. The majority are posterior and occur during a seizure, electrical shock or electroconvulsive therapy, and in patients with neuromuscular disorders and psychiatric disturbances. **OBJECTIVE:** We present a rare case of bilateral simultaneous anterior dislocation of shoulders caused by epileptic convulsive seizure that was treated with conservative treatment. **MATERIALS AND METHODS:** A 22-year-old patient presented to emergency department with pain and inability to move both shoulders after a tonic convulsive seizure. He had history of epilepsy treatment. There was severe pain in bilateral shoulder regions and the patient could not move his arms. The clinical features and radiographs confirmed the diagnosis of bilateral anterior shoulder dislocation without fractures. Bilateral shoulders were reduced easily one after the other using the Kocher and Spaso maneuver. The reduction was accomplished successfully. The patient was immobilized in broad arm slings in adduction and internal rotation. **RESULTS:** After six weeks, with pendulum exercises from two weeks, the patient began to mobilize his arms. Physical therapy was continued for about 3 months following Neers rehabilitation program. At follow-up after 6 months, the patient had full joint range of motion in both shoulders. Dislocation had not recurred. **CONCLUSION:** Bilateral simultaneous dislocations of the shoulders in all planes are rare injuries. Most cases are posterior and due to seizures associated with generalized convulsion, usually due to grand mal epileptic seizures, or after severe electric shock.

**Poster**

**Session: Trauma - Shoulder**

**Abstract number: 22605**

**ULTRASTRUCTURAL PROPERTIES OF THE CORACOCALVICULAR LIGAMENTS AND THE HAMSTRING TENDONS AS AN AUTOGENOUS GRAFT IN AC JOINT RECONSTRUCTION - AN ELECTRONMICROSCOPIC PILOTSTUDY**

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**INTRODUCTION:** In recent studies there has been the attempt to reconstruct a dislocated acromioclavicular joint with the use of free tendon autografts. Thus, the objective of the present pilot study was to assess the ultrastructural properties of the coracoclavicular ligaments and the hamstring tendons, to see if the use of these tendon grafts is eligible, in coracoclavicular ligament reconstruction, from an ultrastructural point of view. **METHODS:** The coracoclavicular ligaments and the hamstring tendons were harvested bilateral from a male cadaver and 2,87  $\mu\text{m}^2$  of each specimen were analysed with a transmission electron microscope. The total number, diameter and cross-sectional area of the collagen fibrils were measured. **RESULTS:** The average number of fibrils was 89 in the semitendinosus tendon, 79 in the gracilis tendon, 256 in the ligamentum conoideum and 225 in the ligamentum trapezoideum. Fibril diameter averaged 132,26  $\pm$  63,01 nm in the semitendinosus tendon, 138,26  $\pm$  57,68 nm in the gracilis tendon, 76,29  $\pm$  20,27 nm in the ligamentum conoideum and 83,78  $\pm$  31,22 nm in the ligamentum trapezoideum. The average cross-sectional area of the fibrils was 15483  $\pm$  14183  $\text{nm}^2$  in the semitendinosus tendon, 16693  $\pm$  14107  $\text{nm}^2$  in the gracilis tendon, 4336  $\pm$  2217  $\text{nm}^2$  in the ligamentum conoideum and 5431  $\pm$  4445  $\text{nm}^2$  in the ligamentum trapezoideum. The differences between tendons and ligaments were statistically significant ( $p < 0,01$ ). **CONCLUSION:** Since a high amount of big diameter fibrils is associated with a higher tensile strength, the use of these autogenous tendon grafts seems eligible.

**Poster**

**Session: Trauma - Spine**

**Abstract number: 20355**

**A EPIDEMIOLOGICAL STUDY OF TRAUMATIC SPINAL CORD INJURY CASES: A HOSPITAL-BASED STUDY FROM DEVELOPING NATION.**

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**STUDY DESIGN AND SUBJECTS:** Retrospective descriptive analysis of data of patients with spinal cord injuries admitted to a tertiary referral medical center from January 1, 2005 to December 31, 2008. **OBJECTIVES:** To identify the demographic profile of patients with spinal cord injuries admitted in this hospital. **METHODS:** A total of 207 patients with traumatic and non-traumatic spinal cord injuries were included in the study. The patient characteristics that were included were age groups, neurologic status, mode and neurological level of injury, management and recovery pattern. **RESULTS:** Ratio of men to women who sustained spinal injuries was 3.6:1. The maximum number of patients was in the age range of 20-39 years. The different levels of spine that sustained injuries were cervical spine (36.2%), thoracic spine (34.3%) and lumbar spine (29.5%). Mechanisms of injury recorded were fall from height (58.9%), fall of weight (7.2%), motor vehicle accidents (21.3%) and non-traumatic causes (12.6%). Of these 207 spinal injury patients, 74.4% were managed conservatively, whereas 25.6% patients were managed surgically. **OBSERVATION:** This study gives a preliminary overview of the characteristics of patients with spinal cord injuries in this hospital catering rural population in developing nation.

**Poster**

**Session: Trauma - Spine**

**Abstract number: 20730**

**COMPLICATION AND FAILURE OF SPINAL INSTRUMENTATION OF THORACOLUMBAR SPINE FRACTURES**

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**PURPOSE:** Management of thoracolumbar spinal fractures is one of the most controversial areas in spinal surgery. Pedicle screws or other implant instrumentation have been widely used for spinal stabilisation following spinal injury. Our aims are to highlight the topic of implant failure. **MATERIALS & METHODS:** 14 patients of unstable thoraco-lumbar fracture with or without neuro-deficit were treated by stabilisation with posterior pedicle screws instrumentation. For the fracture classification system were used to Magerl/AO. The results were evaluated by neurological recovery (ASIA score), pain relief, VAS score and estimate of the implant failure. **RESULT:** Of these patients, 10 patients were male and 4 were female, average age 41. The condition causes included motor-vehicle accident in 4 patients, fall from height in 9 and working accident was 1. All of them received open reduction posterior internal fixation and posterior fusion, with an average follow-up period of 100 months. Patients had spinal fractures between the 4th thoracic and the 5th lumbar vertebral body (22 vertebra). According to the comprehensive classification, the 20 type A, 2 type B were identified preoperatively. The effect of implant failure was also evaluated. In the all patients broken pedicle screws were seen in 8 patients and a broken rod was seen 1 patient in the all patients. Implants were removed for 3 patients. **CONCLUSION:** Back pain and function of these patients were all rated good. 8 patients with breakage of transpedicular screws and 1 patient with breakage of rod were encountered during follow-up, but there were no complaints.

**Poster**

**Session: Trauma - Spine**

**Abstract number: 20992**

**LONG TERM FOLLOW UP OF WHIPLASH INJURY**

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Whiplash injury occurs due to motor vehicle accidents has its long term consequence, nevertheless very little was written about its long-term follow up. The aim of the study is to get the long-term follow up and factors affecting the outcome of Whiplash injury. It is a retrospective study which was done in Russells Hall Hospital. 54 patients were selected in this study, 12 male and 42 female. An inclusion criterion was Whiplash injury due to RTA in years 1995, 1996 and 1997. The results showed: 22 patients were still symptomatic 10 years after injury. 16 patients are still taking had treatment. The mean Whiplash disability Questionnaire score (WDQS) was less than 20 in 38 patients. The mean WDQS in patients with low back pain was 29.23 and for those without back pain was 12.53. In the smokers the mean WDQS was 32.2. In the non-smokers the WDQS was 17.93. The mean WDQS in those who do not drink alcohol was 26.73 and in those who drink alcohol was 16.58. We conclude the Whiplash injury patients have long term residual symptoms mainly pins & needles, headache and dizziness. Increasing age and low back pain are bad prognostic factors. Significant number of patients who claims compensation still have residual symptoms after 10 years. Gender, BMI, Treatment given, Smoking and Alcohol have no effect on the outcome. WDQS, SF 36 and time for symptoms to be relieved are sensitive outcome measures to assess those injuries.

**Poster**

**Session: Trauma - Spine**

**Abstract number: 21034**

**NEW TYPE OF THE FLEXIBLE INTERVERTEBRAL DISC**

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The Laboratory of Biomechanics, CTU in Prague is engaged in development of a movable artificial disc on the basis of silicone. The designed movable artificial disc comprise elastic core made of silicone and two outer plates made of rigid material (PEEK or Titanium). The use of silicone as the main part of the artificial disc comes from the material properties that are similar to the natural intervertebral disc and from the biocompatibility of this material. This replacement most exactly respects the physiology of the real spinal joint. The designed replacement is able to sufficiently damp the axial impact and load. It has determined torsion stiffness and kinematical movement in torsion, determined bend stiffness in lateral and medial plane. In addition these abilities extending the different stiffness and kinematical movement delimitation while patients forward or backward bending. Undisputed advantage is the inclusion all these properties in one implant and therefore exclusion of the dorsal spinal fixators when the articulating processes are damaged. For simulation of the artificial disc loading was created FE model of the physiological lumbar vertebrae. On the results of this analysis was optimized the shape and geometry of the artificial disc. Wear test of the prototypes in accordance with standard specifications ISO 18192-1:2008 were affected.

**Poster**

**Session: Trauma - Spine**

**Abstract number: 21698**

**TWO LEVELS ABOVE AND ONE LEVEL BELOW PEDICLE SCREW FIXATION FOR THE TREATMENT OF UNSTABLE THORACOLUMBAR BURST FRACTURE WITH PARTIAL OR INTACT NEUROLOGY**

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Treatment of unstable thoracolumbar burst fracture is controversial. There are different opinions regarding short segment and long segment pedicle screw fixation in the literature. We retrospectively reviewed the results of 35 unstable thoracolumbar burst fractures with partial or intact neurology. All patients were operated with posterior approach using pedicle screws fixed two levels above and one level below the fracture vertebra. No laminectomy or discectomy and decompression procedure was done. Posterior fusion was achieved in all patients. Average follow-up was 33.8 months. All patients had full recovery at final follow-up. Average kyphosis was improved from 26.5° to 4.2° and 6.4° postoperatively and at final follow-up; and pain scale was improved from 7.5 to 1.6 and 3.9 respectively. All patients resumed their activity within six months. Only 4 (11%) complications were noted in the series with only one hardware failure. Two levels above and one level below pedicle screw fixation in unstable thoracolumbar burst fracture is a useful method to prevent progressive kyphosis as well as preserve one motion segment distally.

**Poster**

**Session: Trauma - Spine**

**Abstract number: 21848**

**COMPARISON OF RECONSTRUCTION OF ILIAC CREST DONOR SITE**

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**PURPOSE:** To evaluate the morbidity related to the harvest of iliac crest related to the iliac bone graft with the reconstruction using 1/3 tubular plate. **MATERIALS AND METHODS:** From January 1998 to August 2007, twenty eight patients who undergone reconstruction of defects of iliac bones following auto iliac bone graft using 1/3 tubular plates for the treatment of anterior fusion of spine and followed up for more than 1 year were entered into this study. Thirty three patients were selected for control group without reconstruction after auto iliac bone graft. Donor site pain, overall satisfaction and wound complications, the external deformity and foreign body sensation were analyzed. Compaired t-test was used for statistic analysis. **RESULTS:** VAS scores for each group were 3.5 to 5.6 at one month, 1.2 to 3.1 at sixth month and 0.1 to 2.2 at one year postoperatively with significant difference statistically( $P=0.002$ ). Twenty four out of twenty eight patients and fourteen out of thirty three patients in each group were satisfied with external deformity showing statistic difference ( $P=0.03$ ). Only one patient and two patients in each group were in poor category of foreign body sense without statistic significance. Twenty one patients and nine patients in each group were satisfied generally with statistic significance ( $P=0.001$ ). **CONCLUSIONS:** We recommend reconstruction of iliac crest donor site using 1/3 tubular plate following auto iliac bone graft to reduce postoperative pain, donor site morbidity.

**Poster**

**Session: Trauma - Spine**

**Abstract number: 22210**

**RESULTS OF C1-2 SCREW FIXATION IN TREATMENT OF ATLANTOAXIS INSTABILITY**

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STUDY DESIGN: Retrospective case series. OBJECTIVE: To evaluate outcomes of C1-2 Screw Fixation in Treatment of Atlantoaxis Instability. METHOD: 22 patients of C1-2 instability (5 RA, 11 acute odontoid fractures, 2 nonunion odontoid fractures, 1 Os odontoidium, 1 atypical hangman fracture, 1 post traumatic rupture of transverse ligament and 1 post infection instability) underwent C1-2 fusion using Cervical Rod Screw fixation during February 2007- February 2009. There are 13 males and 9 women. Mean age was 393.6 yr (range 16-68 yr). C1-2 fusion was performed in 21 cases and C1-3 fusion was done in one case. Mean operative time was 3 hr 40 min (range 2hr30min-8hr45min). Intraoperative blood loss was 620.45cc (range 150-2400 cc). Average postoperative bleeding were 293.63 cc (range 120-700 cc). RESULTS: Fusion was successful at 3 months in 20 cases. 1 patient died from aspirated pneumonia at 2 months postoperatively. 1 case of TIC with nonunion odontoid is not fused at 3 month. There was C2 screw misplaced in 1 case. There were no implants loosening or breakage. Frankel grading scale was improved in 13 patients and there were no neurological deficit in 5 patients and 2 completed cord injury preoperatively. CONCLUSIONS: C1-2 screw fixation for treatment of C1-2 instability is saved and improved neurological outcome and provided good fusion rate.

**Poster**

**Session: Trauma - Spine**

**Abstract number: 22483**

**OSTEOGENIC POTENTIAL OF BIPHASIC CALCIUM PHOSPHATE WITH GROWTH FACTOR LOADED ELECTROSPUN POLYMER FIBERS**

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**INTRODUCTION:** Two widely used components in regeneration of bone are the osteoconductive CaPs and osteoinductive growth factors such as BMP-2. We aimed at achieving controlled release of BMP-2 as well as supplying osteoconductive material to the bone formation site. **MATERIALS AND METHODS:** Electrospun PLGA fibers loaded with BMP-2 were mixed with two different calcium phosphate ceramics, Nanostim and Calcibon. Both ceramics are moldable during implantation. To incorporate the BMP-2 into the PLGA fibers a water-in-oil emulsion electrospinning was performed. The fiber morphology was analyzed using scanning electron microscopy and presence of protein within fibers was visualized using fluorescent proteins and confocal microscopy. hMSC-TERT cell proliferation and differentiation were analyzed on the fibers. In addition to development and characterization of the scaffold with SEM, microCT and BMP2 release kinetics, an in vitro cell study was performed to evaluate nanofibers alone without the ceramic component. **RESULTS:** Fluorescence microscopy revealed uniform fibers with proteins inside. We found no increase in proliferation and differentiation into osteogenic cells, when hMSC-TERTs were seeded on the BMP-2 loaded fibers as well as when cells were affected only by the BMP-2 release from the fibers. A homogenous mixture of the fibers with the calcium phosphates were achieved, but insufficient BMP-2 were released from the fibers to be detected using BMP-2 ELISA assay. **CONCLUSION:** In this study, a new scaffold comprised of electrospun fibers containing BMP-2 mixed in a moldable CaP was developed. However, impaired release of BMP-2 resulted in an inconclusive osteogenic effect of the scaffold in vitro.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 19350**

**THE MODULE TRANSFORMATION (MT) OF THE EXTERNAL FIXATION DEVICES**

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AIM: MT involves Gradually decreasing the quantity of transosseous elements; Reducing the quantity of supports; Changing the geometry of the external support. The use of MT enables the conditions for bone fragment union to be optimized, the risk of transfixion pin-induced joint stiffness and pin-tract infections to be reduced, and patient comfort to be increased. METHOD: 274 series of mechanical tests for substantiation of MT bases along with 370 series of mechanical tests to define frame configuration which has MT possibilities have been executed. The Method of Unified Designation of External Fixation allows checking accuracy of modules assembly; developed Atlas for Insertion of Transosseous Element has allowed us to make a basic frame configuration. 337 clinical cases of MT application have been analysed by SF-36, DASH, and Who Handicap Scales. RESULTS: The new ExFix methods were developed for the treatment of patients with fractures, non-unions, deformities of long bones (27 Patents of RF). On the average bone fragment rigidity fixation in the new ExFix devices is 1.75-4.3 times more, than at Ilizarov frame osteosynthesis. We had 97.3% of good and excellent results. In fractures to complete ROM restoration after frame removal 7-28 days were required. In cases of pre-operative joint stiffness ROM was increased by 30-80 degrees. Pin-tract infection appeared in 7.4%. CONCLUSIONS: The use of MT is perspective one for ExFix development. More detailed information can be taken at lectures and workshops at R.R.Vreden Russian Institute of Orthopedics (<http://rniito.org/solomin>).

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 20311**

**COMPLEX INJURIES OF THE LIMBS - CURRENT PROBLEMS CONCERNING DIAGNOSIS AND TREATMENT**

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**PURPOSE:** Complete diagnosis of trauma includes not only the injuries, but also the mechanism, suggesting the trauma energy. The purpose of this study is to establish a therapeutic protocol depending on clinical aspects. **MATERIAL AND METHOD:** This prospective study analyses 175 patients admitted in our hospital between 01.06.2004-01.06.2008 with the diagnosis of "complex injury of the inferior limb". The main clinical aspects of these cases were: crushing without fracture, fracture, open injury, compartment syndrome (with or without fracture), acute peripheral ischaemia. The authors describe the algorithm for diagnosis (including laboratory findings and complementary examinations) and treatment for these cases. **RESULTS:** In 55% of patients compartment syndrome appeared (86% of cases with fracture and 38% of cases with crushing without fracture). Open fracture appeared in 75% of cases, and close fractures associated with peripheral ischaemia in 38% of cases. 28% of cases were associated with acute peripheral ischaemia. **CONCLUSIONS:** Complex injuries of the lower limb are associated with high energy trauma, which can produce severe injuries, with different clinical aspects. Initial correct diagnosis, followed by specific monitoring and treatment, provides the favourable outcome of the patient. The authors recommend thorough and complete surgical treatment. The efficacy of the treatment is reflected in decrease of fatal complications (renal failure, MSOF) and favourable local outcome

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 20312**

**SEQUENTIAL EVALUATION OF TRAUMA SCORE IN POLYTRAUMA PATIENTS**

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**PURPOSE:** The diagnosis of polytrauma consists of initial scoring of different organ injuries, leading to a certain treatment. Still, this initial protocol is often changed due to unexpected episodes in the outcome of the patient. Even if the patient is carefully monitored, the trauma scores do not reflect this thing. This research studies the way that one sequential evaluation system can improve the situation of the patient. **MATERIAL AND METHOD:** 35 polytrauma patients treated in our hospital between 01.01.2005-01.01.2008, are analysed from the point of view of: initial trauma scores, initial multidisciplinary treatment, separate outcome of the scores ( for organs and systems), which were graphically represented, using a mathematical model, in reference to a basic line, correlated with the patients outcome. **RESULTS:** When the graphical appearance of the trauma scores had no major disturbances and no major variations (not more than 40% from average value of the score), the outcome of the patients was good when proper treated. When the variation was above this value, systemic (sometimes fatal complications) appeared. **CONCLUSIONS:** Graphical analyses of the trauma scores compared with the standard curve of curing represents a useful instrument in monitoring polytrauma patients, in order to establish the best therapeutical moments which improve the outcome of the patients.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 20811**

**RELEVANCE OF MIBI SCAN IN PROGNOSTICATING THE RESPONSE OF CHEMOTHERAPY IN PATIENTS OF PRIMARY MALIGNANT BONE TUMOURS**

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MIBI (methoxyisobutyl isonitrile) is a newer radiopharmaceutical that is useful for assessing tumor response to chemotherapy. It has been shown that a negative MIBI scan after preoperative chemotherapy suggests more than 90% tumor necrosis. Our study: 12 patients with malignant bone tumour were included. Tc 99m MIBI scan was performed. The early and delayed phase images were taken. MIBI images were evaluated visually and quantitatively. For quantitative analysis, a region of interest (ROI) was drawn on the lesion and on a contralateral or adjacent normal area. The lesion to normal tissue count (L/C) ratio was then calculated specifically for early and delayed phases of MIBI scan. Comparison of Early & delayed phase L/C ratios of Tc99MIBI scans & wash out rate was done with clinical response to chemotherapy. All the patients were given standard regime chemotherapy. These patients were followed up for 'Clinical Response' at the end of chemotherapy and correlated with wash out rates (WR %) on MIBI scans using Mann Whitney Exact test. A ROC curve shows the probability of positive test, given no disease is present to the probability of a positive test, given disease is present. This curve is used to determine an optimal cut off point for the test. From the ROC curve, it can be deduced that value of 15.5 WR can be taken as an optimal cut off point for differentiating between responders and non-responders. (Sensitivity = 80%, specificity = 71.4%)

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 20975**

**CORTICOSTEROIDS AS AN ALTERNATIVE TO FASCIOTOMY IN COMPARTMENT SYNDROME**

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Fourty-eight cases of compartment syndrome of leg associated with closed tibial fractures were diagnosed clinically and proved by measurement of intracompartmental pressure by saline injection technique of Whitesides. Fasciotomy was not done in any of the cases and all were managed with glucocorticoid therapy. The raised intracompartmental pressure decreased rapidly and returned to normal within 6 to 12 hours. All the cases had full recovery without any contracture or gangrene except two who came late (after 1 week) and developed mild Volkmann's ischaemic contracture. It is proposed that fasciotomy is not essential in cases of compartment syndrome as it was described when steroids were not invented nor available for therapy. Corticosteroids are better and safer alternative to fasciotomy as they cause less morbidity and prevent infection and amputations often seen after fasciotomy. The most important and hitherto undescribed observation of this study was that the rise in the intracompartmental pressure did not correlate with the degree of trauma to the leg. Based on this a new hypothesis is proposed that patient's hormonal and genetic makeup plays an important role in the development of compartment syndrome and oedema. Patients with allergic predisposition will have more oedema and rise in the intracompartmental pressure as compared to others. Therefore chemical and hormonal factors are more important than mechanical factors in the development as well as treatment of compartment syndrome. Fasciotomy should go obsolete in the current era when we have strong anti-inflammatory drugs like steroids in our hand.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 21090**

**UNCONVENTIONAL PLATE FIXATION**

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The success of plate fixation depends upon the right choice of an implant. At times a plate meant for a specific site, seems inadequate due to its strength or limited option for screw fixations. In such cases we have used different implants unconventionally in 40 cases. The LISS plate meant for lower end of femur was used for trochanteric and subtrochanteric fractures in 8 cases and upper end humerus fractures in 3 cases. The lower end radius plate was used for buttressing posterior malleolus in 4 cases, and for buttressing proximal medial tibial condyle fracture in 2 cases. The upper end tibial buttress plate was used in for fixation of lower tibial fractures in 8 cases. The upper end humerus locking plate was used for comminuted olecranon fractures in 3 cases. At times we have stacked two plates to reinforce the strength of the implant or to fix adequate number of screws. Stacked plates were used for lower end radius fractures in 8 cases and lower end tibia in 4 cases. All patients were followed for at least 6 months with maximum follow up of 18 months. The union was achieved in 39 cases. When an implant meant for specific location seems inadequate then unconventional plate fixation is of great help.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 21185**

**MULTI DRUG RESISTANT PSEUDOMONAS INFECTION IN OPEN FRACTURES POST DEFINITIVE FIXATION LEADING TO LIMB LOSS - A REPORT OF THREE CASES**

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We report a series of three patients with open fractures of lower limb which were initially debrided and stabilized with external fixation. Subsequent conversion to definitive internal fixation was performed. However, all three patients subsequently developed multiple drug resistant pseudomonas aeruginosa infection leading to significant soft tissue loss and bone infection. Failure to eradicate the local virulent infection with multiple surgical debridements, bone resection, negative pressure wound dressings and suboptimal antibiotic treatment led to limb amputations in all three cases. In the modern era with multidrug resistant nosocomial infections, surgeons might need to reconsider existing protocols for definitive fixation of open fracture as there may be a high likelihood for loss of limb. Keywords: open fracture, internal fixation, drug resistant pseudomonas, amputation

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 21260**

**USE OF MUSCULOSKELETAL ULTRASONOGRAPHY IN EMERGENCY DEPARTMENT**

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**AIM:** The aim of the study is presentation of usefulness ultrasonography examination of the musculoskeletal system in Emergency Department. **METHODS:** In 2007-2008 we examined 1947 patients with soft tissues trauma. All patients were examined in the day of the injury with 7.5 Mhz linear probe. There were patients with polytrauma or isolated soft tissues injures. The most common soft tissues injures were: ruptures of the muscles, tendon and ligaments injures, syndesmosis injures. The others rare indications for ultrasonography were diagnosis of foreign bodies, fluid conglomerations or vascular lesions. Patients with suspicion of bone injures have always done radiographic examination before USG. **RESULTS:** We present soft tissues injures assessed by ultrasonography. Major problems of muscles injures were ruptures with internal effusions. The most important ligaments injures were lesions of knee and ankle ligaments. The most common tendon injure was Achilles tendon rupture. **CONLUCIONS:** The ultrasonography examination of the musculoskeletal system is very useful method. This is fast, cheap, painless and dynamic examination method of soft tissues injures. The ultrasonography very often helped us to made a decision of operative or non-operative care.

Poster

Session: Trauma - Systemic

Abstract number: 21354

**SYMETRIC BILATERAL BONE INVOLVEMENT: A RARE COMPLICATION OF CHRONIC LYMPHOCYTIC LEUKEMIA**

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**INTRODUCTION:** The B-cell chronic lymphocytic leukemia is a monoclonal disorder characterized by a progressive accumulation of functionally incompetent B-lymphocytes. It is the most common form of leukemia found in adults in Western countries. **CASE REPORT:** We report the case of a 61-year old patient presenting with a cervical adenopathy whose biopsy concluded to the diagnosis of chronic lymphocytic leukemia. Three years after first symptoms, he presented diffuse aches and pains. The X-rays showed symetric bilateral lytic bone lesions of the proximal metaphysis of the femurs, humerus and tibias. A first pathological fracture of the pertrochanterian region is treated by a cimented Gamma nail. The other involved sites in the lower limbs have been stabilized with cemented nails and plates in a prophylactic manner. **DISCUSSION:** Destructive bone involvement is a rarely recognized complication of chronic lymphocytic leukemias and is more classically seen in pediatric cases of leukemias. These osteolytic lesions in LLC are thought to result from Richter's transformation or metastatic disease from nonlymphoid malignancies. The more frequent complication of LLC is pancytopenia and splenomegaly. An essay of explanation to the bilateral symetricity is discussed in this report. **CONCLUSION:** Bone involvement in LLC is very rare and must be taken in charge by a multidisciplinary team to evaluate whether to treat this condition by radiochemotherapy and/or by prophylactic nailing of the involved bones.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 21419**

**ORTHOPAEDIC SURGICAL MANAGEMENT IN POLYTRAUMA**

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PURPOSE of the study is to evaluate the correct attitude of the orthopaedic surgeon regarding the politraumatized patient. MATERIAL & METHODS: Patient 33 years old, female, who suffered a motor vehicle accident was admitted as politrauma with thoracic, abdominal and spinal trauma, extensive ilioinguinal and right thigh skin degloving lesions and multiple fractures: bilateral pubic rami fracture (AO A1.3), right sacral wing fracture (AO A1.2), right femoral midshaft comminuted fracture (AO 32-C3, Winquist A.IV), left distal diametaepiphyseal femoral displaced fracture (AO 33-C2), right epimetadiaphyseal proximal tibial comminuted fracture (SCHATZKER VI). At the time of admission the patient was in hemorrhagic shock. The surgical interdisciplinary team decided to operate at 24 hours after admission (patient being stabilized). All the fractures were surgically treated in the same session in order to minimize the total surgery time. Osteosynthesis was performed using dynamic retrograde nailing on the right femur, dynamic locked nailing on the right tibia (same incision, floating knee) and static locked retrograde nailing on the left femur. RESULTS: Follow up at 6 months show good left knee ROM (flexion deficit 20 degrees, complete extension), partial weight bearing on the right leg, mild pain at the pelvic level and a good general condition. CONCLUSIONS: The emergency surgical treatment in polytrauma patients is essential to be performed as soon as possible, in as few as possible surgical sessions and using less invasive techniques in order to minimize the inherent complications associated with these cases.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 21420**

**THE USE OF BONE SUBSTITUTES IN ORTHOPAEDIC SURGERY**

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The big bone defects necessitate osteoplasty to recreate the bone continuity, the local architecture and the function of the limb. The material used for the osteoplasty is autologous bone grafts, bone allografts or synthetic bone substitutes. Recreating the bone continuity of a diaphyseal segment that supports very high forces is mandatory in order to avoid the deterioration of the internal fixation material used and to help the bone union. Bone substitutes are also used to fill metaphyseal defects, following open or closed reduction of fractures. There are many types of bone substitutes available for clinical use. In our clinic we used an osteoinductive bone substitute (MIIG X3), that is viscous and then becomes solid forming a bridge between the bone fragments. The bone substitutes were used as part of the surgical treatment in 3 patients with distal metaphyseal radial fractures, 2 patients with large diaphyseal defects and 3 patients with calcaneus fractures. The advantage of using a bone substitute is avoiding one or more surgical interventions to prelevate bone autografts (usually from the iliac crest), with possible local complications and morbidity. The use of bone substitutes respecting the indications of the manufacturer and the local action of the bone substitute is a method that has its advantages and that remains to be studied furthermore.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 21576**

**KYPHOSIS MIGHT HAVE SOME KIND OF INFLUENCES ON THE STERNUM FRACTURE: A CASE REPORT**

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**BACKGROUND:** Older patients with kyphosis tend to suffer from osteoporosis. In such cases, several types of fractures can easily occur. **PURPOSE:** We present a case of sternal fracture in a patient with kyphosis after slight contact. 7 days after she hit her anterior chest, severe pain had suddenly occurred; such a case has not been reported. **CASE REPORT:** 69-year-old woman with kyphosis and Rheumatoid Arthritis on long-term corticosteroid therapy bumped her anterior chest slightly into the corner of her pet cats cage. 7 days after the day, severe pain around her chest suddenly occurred. So she visited a hospital and after having checked her ribs by plane radiographs, she had informed no fracture in her ribs. But severe pain persisted, so she came to our hospital 14 days after the day. At our first examination, it took a long time to change her position due to the severe pain. She could not change positions without assistance. In the lateral view radiograph of the sternum, we could confirm the step off fracture of the sternum and many old vertebral compression fractures in her thoracic and lumbar spines. We also confirmed her bone in osteoporotic condition. We could achieve good result by conservative treatment. **DISCUSSION:** There might be some type of stress on the sternum in the patients with kyphosis, and so, fracture could be easily occurred. **CONCLUSION:** When patients with kyphosis and osteoporosis complain of any discomfort around their anterior chest, sternal fractures must be considered.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 21756**

**TRAUMA PATTERN & IMPACT OF EARLY REHABILITATION, AN EXPERIENCE OF KASHMIR (INDIA) EARTHQUAKE**

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**INTRODUCTION:** The Kashmir earthquake also known as South Asia Earthquake, hit Jammu & Kashmir on 8th October 2005 (registered as 7.6 on Richter scale) and was quite devastating with official toll of deaths being 1,360 deaths in the Kashmir (India). The injured registered were 6,300. This study is an effort to get database of earthquake injury, an insight into the types, magnitude and pattern of injuries following an earthquake and the rehabilitative services offered. **MATERIAL AND METHOD:** Earthquake victims admitted in various hospitals of Srinagar (Capital of Kashmir) and around it was taken as material for study. A two phase study was designed. In first phase data of affected people was collected and early rehabilitation care was provided to them. In second phase, follow-up of patients were done after six months by correspondence & home visit. Finally clubbing the results of these two phases, we came to our conclusion. **SUMMARY & CONCLUSION:** Total 429 victims (admitted in different hospitals of Srinagar & around it) were registered for study. 266 were traced out during follow up. Majority of injured were females of low socioeconomic group, due to collapse of pucca (stone) house. Majority had injuries of limb followed by spine. Result of early rehabilitation in terms of appropriate aids/appliances was found to be satisfactory in 70%. In any event of earthquake, what is important is the scale and speed with which the administration responds to save and restore the precious lives, infrastructure and brings back the normalcy.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 21800**

**THE EFFECTS OF INTRAMEDULLARY NAILING ON TO THE LUNG TISSUE AND OXIDANT-ANTIOXIDANT SYSTEMS (AN EXPERIMENTAL STUDY IN RABBITS)**

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The aim of this study on to the rabbits which reamed and unreamed intramedullary nailings were applied was to compare myeloperoxidase and antioxidants levels at the lung and plasma and to show the differences of electron microscopic findings and DNA fragmentations which were undone before like this experimental model. In this study 36 mature rabbits were used. The enquetees divided into three (KFK=only femur fracture, RFK= reamed intramedullary nailing, UFK= unreamed intramedullary nailing) main groups. Each group was divided into two subgroups according to the time of sacrifice day 1 and 7. Before the sacrifices, blood and lung tissue samples were collected for biochemical parameters, histopathology, transmission electron microscopy and gel electrophoresis. At first day plasma SOD and catalase levels are statistically significant higher at RFK group than the UFK and the KFK groups ( $p<0,05$ ). At day 7. MDA and MPO levels were statistically significant higher at RFK group and SOD levels were significantly higher at UFK group than the other groups. There were excess DNA fragmentations at the RFK and the UFK groups at day 1 and less then respectively RFK group at day 7. At the histopathological and electron microscopic examining local intraalveolar eudema fields and congestive arteriols were seen at the UFK and the RFK groups more than the KFK group. Our study showed that reamed intramedullary nailing is safe as well as unreamed intramedullary nailing at femur fractures without pulmonary contusion.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 22053**

**3-D MDCT IN THE EVALUATION OF SKELETAL TRAUMA**

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**OBJECTIVE:** The purpose of this study is to determine the value of 3-dimensional (3D) multidetector computed tomography (MDCT) imaging, in diagnosis of posttraumatic skeletal pathologies. Conventional axial and multiplanar reformation (MPR) CT images were accepted as standard and compared with 3D images to evaluate posttraumatic pathologies. **METHODS:** The study population consisted of 55 patients (15 female, 40 male) (Mean age: 38.9+/-20.3) who applied to Radiology clinic after acute trauma and underwent multidetector row computed tomography (MDCT) between October 2006 and December 2008. The images were analyzed by two radiologists. Radiologist I validated axial and MPR images, where as Radiologist II validated axial and 3D images. The findings of the two radiologists were scored according to its majority (from 0 to 3). Statistical analyses were performed using chi-square distribution test. **RESULTS:** Out of 55 patients, 31 were due to motor vehicle collision, 22 were due to falls and were due to sports injuries. The time needed for the evaluation time of osseous pathologies with 3D images were less than MPR images. 3D images of fractures gave the radiologist and the surgeon the opportunity of a detailed and faster assessment in extremities. In spine, MPR images were more valuable. Statistical analysis with chi-square distribution test determined that 3D images were more effective than the MPR images in revealing the pathologies. **CONCLUSIONS:** 3D Dual Source MDCT can be used accurately to define the pathology in trauma patients in emergency room without any need of correlation with any other radiological imaging.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 22272**

**TREATMENT OF LARGE BONE DEFECTS WITH ALLOGENEIC PLATELET RICH PLASMA AND AUTOLOGOUS CANCELLOUS BONE**

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Some fractures heal poorly with standard treatment. Although the bone grafting technique is considered a standard treatment, it is limited with many factors and there is a need for enhancement of this procedure. To improve the outcome of the healing process, one can influence it by applying platelet rich plasma gel locally, thereby increasing concentration of cytokines and growth factors. In our department, eight patients with traumatic pseudarthroses and fractures that demonstrated poor healing entered the study. Four fractures had been infected and all fractures resulted in a bony defect. The experimental treatment was prepared according to the ICH guidelines and approved by the Committee for Medical Ethics of Slovenia. The standard protocol for the preparation of allogeneic platelet rich plasma gel with suspended autologous cancellous bone was based on laboratory experiments in vitro. ABO and RhD identical, leukocyte depleted and irradiated platelets were used activated by a CaCl<sub>2</sub> and thrombin mixture. In their follow-up, the ingrowths of bone grafts were measured by using x-ray and CT imaging analysis (3). Six of eight transplanted bone grafts were well incorporated into the fracture in the observation time of 12 months, in average in 7 months. One patient had to be reoperated and one was dropped out. The clinical outcome of the operated patients was very satisfactory and encouraging. The results show that using allogeneic platelet rich plasma and autologous cancellous bone in the treatment of large bone defects is safe and has a promising therapeutic potential.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 22280**

**VACUUM ASSISTED DRESSING AND CULTURE SPECIFIC ANTIBIOTIC BEADS FOR CONTROL OF INFECTION AROUND INTERNAL FIXATION DEVICES**

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**AIM:** The control of infection around internal fixation devices is generally difficult due to the formation of glycocalyx around the metallic implants. Early infections are generally dealt with by washout and parenteral antibiotics. We present our series of successful control of acute infection around internal fixation devices with the use of culture specific high dose antibiotic cement beads and negative pressure dressings. **METHODS AND MATERIALS:** Prospective collection of data of 12 consecutive patients who underwent debridement with antibiotic bead insertion and VAC dressing for acute infection around internal fixation devices were included in the study. All operations were performed or closely supervised by a single surgeon. Patients were followed up prospectively for minimum of 6 months following the index procedure. Secondary outcome measures included complications such as repeat debridement, delayed wound healing & removal of internal fixation device. **RESULTS:** There were 6 females and 6 males. The average age was 54 years (Range 26 to 82). The follow up period was between 6 to 24 months. All patients underwent successful wound healing and union around the fracture / arthrodesis site. One patient needed removal of plates following the fracture union for residual pain. **DISCUSSION:** Custom made culture specific antibiotic beads facilitate the local delivery of high doses of specific antibiotics without any systemic side-effects. The use of vacuum assisted dressing helps reduction of collection around the internal fixation device and accelerates wound healing, allowing retention of the internal fixation devices till fracture / arthrodesis union.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 22323**

**EXPERIENCES WITH OPERATION OF PATIENTS WITH SERIOUS CHEST INSTABILITY**

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**PURPOSE:** The purpose of this study was a retrospective analysis of cases with operated flail chest injuries, making also a comparative analysis of the results of the surgical and non surgical treatment, using a randomised control group of chest injured patients, treated in our hospital in the same time conservatively. **MATERIAL AND METHODS:** We operated on and then we treated 19 patients with flail chest at our Trauma Department and Intensive Care Unit of the Károlyi Sándor Hospital between 2002 and 2008. The average age of the patients we treated with stabilize operation was 47 years, and at the patients, who have been not operated, was 50 years. We analyzed the effect of the chest stabilization operation in a retrospective examination. We compared results in the operated patient group and in another group without any chest stabilize operation. Both of the groups were on the same severity level. **RESULTS:** The average ISS was 29.8 in the operated and 28.6 in non-operated group. The time needed for respiration (7.06 vs. 10.81 days) and intensive care (14.4 vs. 21.31 days) was significantly shorter compared to the patients treated without operation. In the operated group less patient required EDA and the treatment of these patients needed lower medical cost. **CONCLUSIONS:** We recommend primary stabilization of the ribs in those cases, where the instability of the chest in one or both side is serious.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 22439**

**TOURNIQUETS AND EXSANGUINATORS - THEIR ROLE IN SURGICAL SITE INFECTION**

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BACKGROUND AND PURPOSE: Fomites are increasingly being recognised as a source of hospital acquired infection. We have therefore assessed tourniquets and exsanguinators for the presence of bacterial pathogens in one elective and two trauma orthopedic hospitals. MATERIAL AND METHODS: Swabs were taken prior to and after decontaminating these devices with one of three different cleaning modalities. These were then assessed for colony count and organisms identified. RESULTS: Bacteria commonly implicated in surgical site infections such as Coagulase negative Staphylococci, Staphylococcus aureus and Proteus were prevalent. Also cultured was a resistant strain of Acinetobacter and Candida. Exsanguinators were the most heavily contaminated devices and colony counts in the trauma hospitals were up to 400% higher than in the elective hospital. Alcohol and non-alcohol based sterile wipes were both highly effective in decontaminating the devices. INTERPRETATION: Infective organisms reside on the tourniquets and exsanguinators presently used in the orthopaedic theatre. These fomites may potentially be a source of surgical site infection. We have demonstrated a simple and effective means of decontaminating these devices between cases.

**Poster**

**Session: Trauma - Systemic**

**Abstract number: 22631**

**THE EFFECTIVE DIFFUSIVITIES IN IMMOBILIZED CELL SYSTEMS AT INTERFACE WITH IMPLANT DEVICES**

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Titanium is the material of choice for load-bearing bone contacting applications. Interfacial interactions at the bone-implant interface are recognized as the key to osseointegration and an extensive literature exists on titanium surfaces & interfaces. This paper describes the enhancement of bone regeneration at the interface with implant devices (Ti6Al4V), by immobilization of biomolecules to titanium surfaces. These techniques based on surface linking of peptides or extracellular matrix proteins are reviewed, trying to describe surface modification approaches and to present results of biological evaluations, Furthermore, precise universal models for material exposed to a solute environment are considered. Thus, two simple methods are described to enable this. The first uses Ficks law to provide an estimate of exposure period required induce corrosion providing that a reliable coefficient of diffusion is available and is applicable to new construction of devices. The second method uses an existing solute concentration profile to estimate residual durability. For the experimental results, we were found that the rate of solute induced corrosion was related to the rate at which solute can be recharged to the corrosion site. This is related to the coefficient of solute diffusion, thus material with a low coefficient of diffusion will tend to also have a relative slower rate of corrosion. Consequently, a classification for corrosion rate based on solute concentration and coefficient of diffusion value has been proposed. It is recommended that in design for durability, the importance is given to achieving the minimum practical solute transportation rate to the reinforcing of material.

**Poster**

**Session: Trauma - Tibia/Fibula**

**Abstract number: 20351**

**COMPARISON OF OUTCOME OF PRIMARY VS SECONDARY ILLIZAROV FIXATOR APPLICATION IN OPEN TIBIAL SHAFT FRACTURES**

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To compare outcome of primary and secondary Illizarov fixator application as a treatment method for open tibial fractures in terms of non-union and wound infection. We prospectively studied the results of 36 patients with an open tibial shaft fracture with or without comminution treated and followed up for mean of 3.1 years (range = 2.2-4.3 years). The patients were divided into two groups depending on the treatment protocol and timing of wound closure and Illizarov application primary (n=16) and secondary (n=20). Majority of patients were young males and most common mode of injury was road traffic accidents. In the primary group, healing was achieved in 14 out of 16 patients. In the secondary group, complete recovery was achieved in 18 out of 20 patients. There were 19 cases (12 primary and 7 in secondary groups) with bone. Chronic osteomyelitis persisted only in 1 patient. Overall healing rates, duration of hospital stay, number of surgeries required, eradication of infection, correction of limb length discrepancy was significantly better (p value <0.05) in majority of patients in primary group and is recommended for open tibial fractures.

**Poster**

**Session: Trauma - Tibia/Fibula**

**Abstract number: 21162**

**MANAGEMENT OF DISTAL TIBIAL FRACTURES**

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**INTRODUCTION:** Distal tibial fractures are difficult fractures to treat. Controversies exist regarding different surgical procedures. This study presents a prospective analysis of a 40 cases of distal tibial fractures treated with different surgical techniques. **METHODS:** Forty cases of distal tibial fractures were treated with different surgical procedures. The methods of fixation were (1) Closed reduction internal fixation with interlocking nail with or without the use of poller screws (2) MIS with locking compression plates (3) Multiple screw fixation of the articular surfaces (4) Limited internal fixation augmented with tubular external fixators (5) Joshis external stabilisation system with limited internal fixation. All patients were followed up at 6 weeks, 12 weeks, 3 months & 6 months. **RESULTS:** All fractures eventually united. Complications encountered were infection (5%), non union (8%) delayed union (13%) ankle stiffness (40%) and persistent swelling (21%). Secondary procedures required following complications were debridement, secondary bone grafting, removal of prominent screws, removal of implant, and arthrodesis. **CONCLUSION:** It is difficult to achieve an anatomical reduction by closed or minimal invasive techniques. However these techniques preserve the blood supply of the fractured fragments. The objective should be to achieve fracture fixation by any technique which assists physiological process of bone healing with minimal surgical trauma. Although these fractures have an intermediate-term negative effect on ankle function and pain and on general health, few patients require secondary reconstructive procedures and symptoms tend to decrease for a long time after fracture healing

**Poster**

**Session: Trauma - Tibia/Fibula**

**Abstract number: 21588**

**LOCKED INTRAMEDULLARY OSTEOSYNTHESIS IN NON-UNION OF THE TIBIA**

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We observed the results of locked intramedullary osteosynthesis in 48 patients with non-union of the tibia from 6 months to 4 years. In 27 cases the patients had been previously operated using external fixation with Ilizarov apparatus (13); plates (11); screws (2); a plate and Ilizarov apparatus (1). We achieved union in 44 patients (91,6%) within 10±1,3 months, including 4 out of 6 patients with bone defects and osteomyelitis of the tibia in remission period. We are still continuing dynamic control in 2 patients while in 2 other patients union has not been achieved. The results of the treatment allow us to apply locked intramedullary osteosynthesis in complicated non-union of the tibia.

**Poster**

**Session: Trauma - Tibia/Fibula**

**Abstract number: 21590**

**THE MISTAKES OF LOCKED INTRAMEDULLARY OSTEOSYNTHESIS IN TIBIAL FRACTURES**

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We have analyzed the mistakes in 35 out of 250 patients with fractures of tibia which were operated by using locking nails. The mistakes were categorized as technical and tactical. Technical mistakes included: troubles in distal locking; splitting of the bone; displacement of bone fragments during the introduction of the nail in proximal fragment etc. were observed in 19 patients. Tactical mistakes were as follows: overestimation of locked intramedullary nailing abilities and poor reduction; unreasonable abandoning in the reduction and fixation of the distal fibula; early uncontrolled weight bearing etc. We offer several ways of preventing such mistakes. More importance is emphasized on having a good quality of reduction and control of loading in the early postoperative period.

**Poster**

**Session: Trauma - Tibia/Fibula**

**Abstract number: 22095**

**CLOSED TIBIAL INTRAMEDULLAR NAILING 11 YEARS FOLLOW-UP RESULTS**

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**PURPOSE:** Tibial fractures are a common occurrence. Modern orthopedic surgery resolves this problem in quick and cost effective ways. Closed tibial intramedullar nailing is a very popular technique. By examining the 11 years results we can gauge the effectiveness of closed tibial intramedullar nailing. **MATERIAL AND METHOD:** Between 1996 and 1997, 20 patients had closed tibial intramedullar nailing performed. Six patients were available for follow-up. All patients were male with an average age of 31.5 patients had static fixation and 1 patients had dynamic fixation. Average follow-up period was 11.6 years. During their follow-up patients were examined using knee/ankle function, tibial length, Johner-Wrushi criteria and AO fracture classification. **RESULTS:** 5 patients measured perfect satisfaction and 1 patients good. The average time required before being able to bear weight on the fractured leg was 3 months. Post-operative infection, non union, and tibial rotation was not seen in any patients. Ankle and knee function was found to be normal. The average difference in fracture to normal leg length was 10.5 mm. All patients had been able to undertake heavy work without any pain. **CONCLUSION:** All patients had been able to return to quickly a normal life after closed tibial intramedullar nailing. While some patients had leg shortening, this was a result of the closed tibial intramedullar nailing being performed late on the patient after more conservative treatments had been attempted. All patients are very satisfied. We advise the use of closed tibial intramedullar nailing as an effective treatment.

**Poster**

**Session: Trauma - Tibia/Fibula**

**Abstract number: 22356**

**ARTHROSCOPICALLY ASSISTED OSTEOSYNTHESIS OF TIBIAL PLATEAU FRACTURES**

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**BACKGROUND:** The purpose of this study was to evaluate the results of tibial plateau fractures treated with arthroscopically assisted locked-plate osteosynthesis. **METHODS:** We report on 97 patients (57 men and 40 women) with a mean follow-up time of 35 months (6 - 70 months). All fractures were evaluated according AO/ASIF and Schatzker classifications. All fractures were reduced under arthroscopic and/or fluoroscopic control. After reduction of the depressed fractures the autological bonegraft or  $\beta$ -tricalcium phosphate were used. We encouraged partial and full weight-bearing by the sixth and tenth weeks, respectively. **RS:** According to the Rasmussen grading system there were 57,7% excellent, 24,7% good, 15,5% fair, 2,1% poor radiological results, and 64,4% excellent, 27,9% good, 5,6% fair, 2,1% poor clinical results. According to the Resnik and Niwoyama criteria after 36 months osteoarthritis progressed by 1 grade in 28 patients, 2 grade in 5 patient and 3 grade in 4 patients. **CONCLUSIONS:** Arthroscopically reduction and locked-plates fixation has many advantages. It can treat associated intraarticular soft tissue components, visualize the chondral surface reduction, lavage the hematoma and smaller loose fragments, decrease soft tissue dissection, reduce the risk of scarring and promote rapid recovery.

**Poster**

**Session: Trauma - Tibia/Fibula**

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**COMPLEX C3/AO PROXIMAL TIBIAL FRACTURES TREATED BY ARTICULAR RECONSTRUCTION, BONE SUBSTITUTE AND MIPO WITH LOCKED COMPRESSION PLATE - TWO CLINICAL CASES**

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**INTRODUCTION:** Complex fractures of the proximal tibia are tricky orthopedic situations. MIPO have improved the results while the angular stability plate type LISS-PLT or LCP-PLT were specially created for this kind of fractures. **AIM:** This study aim was to evaluate the results obtained in two cases with complex C3/AO proximal tibial fractures. **METHODS:** The operative steps for the 2 considered cases were: articular reconstruction, bone defect grafting with bone substitute (Eurocer), MIPO with LCP-PLT. In one case we used two approaches, one limited medial approach for the reconstruction of the medial plateau (osteosynthesis with cancellous screws and bone substitute) and one lateral for the lateral plateau and the LCP insertion. In this case, the postoperative Xrays showed unacceptable reduction of the medial side so we have performed a reintervention with arthroscopic evaluation, reduction adjustment and fixation with medial T-plate and screws. **RESULTS:** The fractures healed uneventful at 3 months postoperative and the mean range of knee motion was 125°. **CONCLUSIONS:** Due to major biomechanical and biological advantages, the authors consider that the internal fixator type LCP-PLT represent the ideal implants for the complex fractures of proximal tibia, after the adequate articular reconstruction. Even if this plate allows the stabilization of the medial and lateral column by a single lateral approach, in some cases a limited medial approach with a T-plate fixation is vital.