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**ABSTRACT BOOK
ORAL PAPERS**

Date: 2012-11-28

Session: Hip: Total Hip Arthroplasty - Bearing Surface

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 31640

ADVERSE REACTION TO METAL DEBRIS FROM HEAD-NECK JUNCTION OF METAL ON METAL TOTAL HIP ARTHROPLASTY

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Introduction: Metal on metal (MoM)-total hip arthroplasty (THA) was recently employed because of several architectural benefits. However, it was revealed that adverse reaction to metal debris (ARMD) was developed by metal wear particles which mainly contained Cobalt (Co) and Chrome (Cr). Ten ARMD cases were diagnosed from 38 treated hips with particular MoM-THA. Purpose of present study was to reveal pathology of ten ARMD cases. Methods: All ARMD cases showed metal debris-like deposits on head-neck junction on trunnion and massive periprosthetic scar tissues at revision surgery. Histological analysis and measurement of metal ion level were performed on three locations in the scar tissue: inner, middle, and outer layer. Energy dispersive X-ray spectrometry (EDS) was performed to analyze component of deposits. Results: The Co and Cr level in the inner layer were significantly higher than those of the other layer. In histological analysis of inner layer, necrotic and avascular scar tissue was found in absence of inflammatory cell. The EDS analysis indicated two different content ratios of O and C were seen. Some deposits had more O than C, others had the reverse. The Cr concentration was significantly higher where the O concentration was greater. Discussion: The EDS finding suggested that the deposits resulted from tribochemical reaction on trunnion. The histological analysis and the measurement of metal ion suggested that excess accumulation of Co and Cr induced the severe necrosis in the periprosthetic tissue via their toxicity. In conclusion, it was suggested that present ARMD cases were caused by 'trunnionosis'.

Date: 2012-11-28

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Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32689

LONG TERM STABILITY OF CERAMIC COMPOSITE IN THA

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The aim of this study was to evaluate the resistance of Alumina Matrix Composite to environmental degradation. Accelerated aging tests in water steam at 142 °C, 134 °C, 121 °C, and 105 °C were performed to evaluate the aging kinetics of the composite. X-ray diffraction was used to determine the monoclinic phase content on the material surface. Phase transformation is associated with weakness and increase in roughness of zirconia ceramic implants. The results show that although a rise in monoclinic content is predictable after long aging duration in vivo, the impact of the transformation is quite different to monolithic zirconia. Compare to the ceramic composite, a zirconia femoral head exhibits an important increase of roughness from 2 nm to more than 50 nm when submitted to the same length of ageing. Other tests with hip simulators, under severe micro separation have been done to analyse the impact of aging on wear performance. The main wear zone on femoral heads underwent a phase transformation from tetragonal to monoclinic (23% monoclinic) at 5 Million cycle duration without any change in roughness at 5Mc duration. This experimental testing program has enabled a prediction to be given for the long-term in vivo environmental resistance of prostheses made out of Alumina Matrix Composite.

Date: 2012-11-28

Session: Hip: Total Hip Arthroplasty - Bearing Surface

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32768

OXIDATIVE DEGRADATION IS NOT A CONCERN IN A FIRST-GENERATION ANNEALED HIGHLY CROSS-LINKED POLYETHYLENE IN YOUNG AND ACTIVE PATIENTS AT TEN YEARS

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INTRODUCTION: Highly cross-linked polyethylene (HXLPE) in total hip arthroplasty (THA) has been shown to reduce wear rates and osteolysis at medium-term follow-up. Concerns remain regarding oxidative stability and hence wear performance in the long-term, particularly in young and active patients. The purpose of this study was to evaluate the wear performance of a first-generation, annealed HXLPE beyond ten years in a cohort of young and active patients. **METHODS:** 91 patients (112 hips) were recruited into this study and followed prospectively. All patients underwent THA using the same cementless system with a 28mm head and a first-generation XLPE liner (75K Gy gamma irradiation and then annealed). Linear wear rates were calculated digitally using the Roman V1.70 software. Radiographs were analyzed for osteolysis. **RESULTS:** At a minimum of ten years follow-up (mean 11.1 years (10.2-13.1)), 62 patients (78 hips) were available for review. The mean age of the patients at the time of surgery was 53 years (35-64). The mean preoperative UCLA score was 8.1 (7-10). At longest follow-up, the steady state wear rate from 1 year onwards was 0.011 ± 0.04 mm/yr. The survivorship for wear-related complications was 100% and no osteolysis was observed. **DISCUSSION:** The first-generation annealed HXLPE used in this study exhibits excellent wear characteristics at ten years. At this point, these results dismiss the concerns regarding oxidative degradation of this type of HXLPE and are particularly significant given the fact that the patients were young and active.

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Abstract no.: 32070

WEAR ANALYSIS OF OXIDIZED ZIRCONIUM FEMORAL HEADS IN TOTAL HIP ARTHROPLASTY – A MULTICENTRE RANDOMISED CONTROLLED TRIAL

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Intro: In Total Hip Arthroplasty (THA), polyethylene wear reduction is key to implant longevity. Oxidized Zirconium (OxZi) unites properties of a ceramic bearing surface and metal head, producing less wear in comparison to standard Cobalt-Chromium (CoCr) when articulating with Cross-linked polyethylene (XLPE) in vitro. This study investigates in vivo polyethylene (PE) wear, outcomes and complications for these two bearing couples in patients at 5 year follow-up. Methods: 400 patients undergoing THA across four institutions were prospectively randomised into three groups. Group I received a cobalt-chrome (CoCr) femoral head/ cross-linked polyethylene (XLPE) liner; Group II received an OxZi femoral head/ ultrahigh molecular weight polyethylene (UHMWPE) liner; Group III received an OxZi femoral head/XLPE liner. Bearing heads were 32mm. Linear wear rate was calculated with Martell computer software. Functional outcome and complications were recorded. Results: At median follow-up of 3.7 years, implant survivorship was 98% across all groups with no difference in SF-36, WOMAC, pain score or complications ($p > 0.05$). After the first 12 months of creep, rate of linear wear over 3 years was 0.07mm for Group I, 0.16mm for Group II, and 0.03mm/year for Group III. A significant difference was detected when using UHMWPE ($p > 0.05$) but not when using XLPE ($P < 0.05$). Conclusion: At midterm follow-up, an XLPE acetabular liner is more important in reducing wear than the femoral head bearing. There is a trend towards lower wear when coupling OxZi rather than CoCr with XLPE; further long-term analysis is recommended to observe this pattern.

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Room: Maktoum A

Abstract no.: 31307

OUTCOME OF CERAMIC – CERAMIC BEARINGS IN CEMENTLESS HIP ARTHROPLASTY: A CLINICAL AND RADIOLOGICAL EVALUATION WITH UP TO NINETEEN-YEAR FOLLOW-UP

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Introduction: Recent enthusiasm for metal on metal resurfacing seems to be declining. Will Hydroxyapatite hip (HA) arthroplasty associated with ceramic bearings produce uncomplicated function in younger, active patients? The incidence of aseptic loosening, dislocation and broken implants has been particularly investigated. Methods: This is a study extending over 19 years of 627 HA hip arthroplasties with ceramic bearings. Annual review has been performed using Harris Hip Score to assess pain and function and X-rays to check osseointegration. Alumina ceramic was inserted in 467 hips. The newer Zirconia Toughened Alumina (ZTA) has been inserted in 160 hips. There are 118 hips still under review at 10 or more years. Results: Aseptic loosening is unusual (one stem, two acetabulae (3 of 1252 components, 0.24%) Failure from mal-orientation with repeated dislocation occurred in six hips (0.96%). Three alumina heads (0.48%) and two alumina liners (0.32%) broke. There has been no failure of ZTA ceramic. No patients have thigh pain. Osteolysis and debris disease have not arisen. Harris Hip Scores show 91.2% scoring over 90 or 100. Overall revision rate is 2.8%. Conclusions: Assessments confirm that patients remain well. HA fixation secures the implants in these cementless total hip replacements. Ceramic bearings cause negligible wear. Failure from broken alumina components is unusual. Alumina has now been superseded by ZTA for implantation. Ceramic on ceramic is a reliable choice for bearing surfaces in patients of any age and either sex.

Date: 2012-11-28

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Room: Maktoum A

Abstract no.: 31565

POLYETHYLENE LINER EXCHANGE IN REVISION TOTAL HIP ARTHROPLASTY: A STUDY OF 93 CASES

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We studied the clinical outcomes, complications and survivorship of polyethylene liner exchange into a well-fixed cementless cup in 93 revision THA cases in 80 patients in our institute from 1995 to 2010. There were 39 women and 41 men. The mean age at revision was 53.3 years (27-82). The mean duration between primary THA and revision was 10.9 years (0.3-18.4). The main reason for exchange included was PE wear. 47 liners were fixed into the old cup using cement, 46 were fixed with the original locking mechanism. 60 liners were highly cross-linked polyethylene, 33 were conventional. The mean follow-up was 7 years (5-12). Osteolysis was observed in 82 liner exchange surgeries. The Harris Hip Score changed from 85.6 to 89.0. 10 hips needed re-revision. Using re-revision for component loosening as the end point, the 10-year survivorship in the HXPE group was 100%, in the conventional PE group was 84.3%; in the cement locking liner group was 100%, in the original locking group was 84.8%. Using re-revision for any reason as the end point, the 10-year survivorship in the HXPE group was 90.5%, in the conventional PE group was 66.7% (Fig 9); in the cement locking group was 90.4%, in the original locking group was 65%. Liner exchange into a well-fixed metal cup, either with cement or original locking mechanism, is a safe and successful method of revision for polyethylene wear. Highly cross-linked PE has higher wear resistance, reduced incidence of osteolysis and better survivorship.

Date: 2012-11-28

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Room: Maktoum A

Abstract no.: 31994

METAL ALLERGY AFTER TOTAL HIP REPLACEMENT WITH RECAP HIP RESURFACING SYSTEM OR MALLORY-HEAD EXETER PROSTHESIS: A RANDOMISED CONTROLLED TRIAL WITH 5-YEAR FOLLOW-UP OF 52 PATIENTS

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Introduction: Metal-on-metal total hip arthroplasties was re-introduced to address osteolysis and aseptic loosening of early metal-on-polyethylene arthroplasties due to polyethylene wear. The volumetric wear-rate has been greatly reduced; however, because of nano size wear-particles the absolute number has been greatly increased. Thus, a source of metal-ion exposure with the potential to sensitise patients is present. We hypothesized that the increased amount of wear particles results in an increased metal-ion release and an increased incidence of metal allergy (Type IV). Methods: 52 hips (22 men and 30 women, median age 60 (51-64)) were randomized to either Hip resurfacing system or the Mallory-Head/Exeter. Spot urine samples was collected preoperatively, postoperatively, 3 months, 1 year, 2 years, and after 5 years and evaluated with inductively coupled plasma-sector field mass spectrometry. After 5 years hypersensitivity to metals was evaluated with patch test and lymphocyte transformation assay. Furthermore the patients answered a questionnaire about hypersensitivity. Results: A statistically significant 10 to 20-fold increased in cobalt and chrome urine was observed throughout the entire follow-up. Surprisingly, we did not observe any increase in metal allergy. Interpretation: We observed a significant increased metal-ion release during the entire follow-up period. We did not find any increased tendency towards more metal-allergy in the metal-on-metal group. The impact of long-term metal exposure remains; however, uncertain.

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Abstract no.: 32351

BILATERAL METAL-ON-METAL HIPS: SERUM METAL ION LEVELS AND ADVERSE REACTION TO METAL DEBRIS

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Compared to unilateral metal-on-metal (MoM) hips, there is limited evidence about metal ion serology and incidence of adverse reaction to metal debris (ARMD) in bilateral MoM hips. The aim was to evaluate serum cobalt and chromium levels, incidence of ARMD and revision rate in bilateral MoM hips. One hundred and eighteen patients with bilateral MoM hips were reviewed. There was wide variation in serum cobalt and chromium levels. The median cobalt level was 7.8µg/L (range 0.7-1008) and chromium 6.6 µg/L (range 1.3- 53) at median 30 months. Seventy three patients (62%) had positive metal ion serology as per MHRA guidance (>7µg/L). One hundred and twenty-one hips (67 patients) were further investigated at median 42 months with MRI. Fifty-one hips (38 patients) had positive MRI findings for ARMD. There was a significant difference in serum cobalt and chromium levels in patients with ARMD compared to well functioning hips. Twenty-four hips (22 patients) have been revised at median 37 months with histological confirmation consistent with ARMD. Two hips have been revised for infection and five of these had negative MRI findings. The serology (cut off level 7µg/L) has sensitivity of 72%, specificity of 44%, positive predictor value 42% and negative predictor value of 73%. These results show that serum metal ions in patients with bilateral MoM hips are higher than unilateral reported in previous studies. In contrast to unilateral patients, the serology in patients with bilateral MoM hips is more sensitive and less specific for the diagnosis of ARMD.

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Abstract no.: 31004

ARE METAL ION LEVELS INDICATOR FOR POTENTIAL REVISION SURGERY IN CASE OF METAL ON METAL HIP ARTHROPLASTY?

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Objective: To compare the metal ion levels in group of patients who had undergone revision surgery in 5-year follow up period versus those who were asymptomatic 5 years from their metal on metal total hip replacement or hip resurfacing surgery. Materials and Methods: Cobalt and Chromium levels in 100 patients who underwent revision surgery within 5 years of primary surgery and in those that were completely asymptomatic at minimum 5 year follow up period were recorded. The results were tabulated separately for those who underwent total hips and those who underwent hip resurfacing. Results: The mean Cobalt and chromium level for Revision hip resurfacing group was: 421.31 & 285.85 respectively. The mean Cobalt and chromium level for Revision total hip group was: 584.62 & 302.59 respectively. The cobalt chromium levels in patients who underwent resurfacing revision were significantly higher than non revision group and the standard values for human population ($p < 0.05$). Conclusion: Measuring cobalt and chromium levels may give an indication to the patients who are likely to undergo revision surgery in future. This may help clinician reach optimal decision and prognosticate the patient.

Date: 2012-11-28

Session: Hip: Total Hip Arthroplasty - Bearing Surface

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 31972

**ATYPICAL PSEUDOTUMOUR AFTER METAL-ON-POLYETHYLENE
TOTAL HIP REPLACEMENT CAUSING DEEP VENOUS THROMBOSIS**

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The development of pseudotumours after total hip arthroplasty (THA) can lead to catastrophic consequences necessitating early revision surgery. Pseudotumours have long been associated with conventional metal-on-polyethylene bearing hip arthroplasties due to wear debris. Materials and methods: We describe a patient who developed a mass extending into the pelvis, five years after a metal-on-polyethylene total hip arthroplasty (THA). Interestingly, the histological pattern of perivascular lymphocytic infiltrate and fibrinoid necrosis was more in keeping with a metal-on-metal bearing failure. The pseudotumour compressed the femoral vein causing a deep venous thrombosis. This is the first time that a pseudotumour has presented with features of an aseptic lymphocyte-dominated vasculitis-associated lesion (ALVAL) following a metal-on-polyethylene arthroplasty. It is also the fourth citing of a pseudotumour causing deep venous thrombosis. Results: A revision THA was undertaken; intraoperatively, a large volume of yellow-grey dense inflammatory tissue was noted extending anteriorly into the hip joint, surrounding the acetabular cup. There was no evidence of loosening with minimal volumetric wear noted in the polyethylene liner. The visible parts of the mass were excised through a combined anterior and posterior approach, the cup was exchanged and bearing surfaces revised to ceramic-on-ceramic. Conclusions: Our case is interesting as, to our knowledge this is the first time that a metal on polyethylene pseudotumour has presented with histological features of ALVAL. An increased awareness of pseudotumour occurrence following arthroplasty should alert the physician to patients presenting with abdominal pain, masses, and urological or neurovascular signs and symptoms.

Date: 2012-11-28

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Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31044

STEM CELLS LOADED ALLOGRAFT WITH ACETABULAR REINFORCEMENT KERBOULL CROSS AND RETENTIVE CUP FOR ACETABULAR BONE RECONSTRUCTION IN HIP REVISION

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Deficiencies of acetabular bone stock at revision hip replacement are usually reconstructed with allograft using impaction bone grafting and a reinforcement metal device. We used in 20 patients a standard frozen irradiated bone allograft vitalised with autologous marrow stem cells prepared with concentration by centrifugation and compared the results with those of 20 other patients who received standard frozen irradiated bone allograft without stem cells. An acetabular reinforcement using a Kerboull cross was used to support the retentive cup. Material and methods: Marrow was aspirated from iliac crest, concentrated on a cell separator, and then injected into the femoral head. The number of progenitor cells that was transplanted was estimated by counting the Fibroblast Colony-Forming Units (FCFUs). After injection of 6 cc of concentrate bone marrow, the allograft femoral head contained average 3600 progenitor cells. Results: With a follow-up of ten years, the 20 hips that received allograft vitalised with autologous marrow showed better evidence of trabeculation and incorporation of the allograft with no acetabular loosening, compared with 7 failures in the other group of 20 hips with allograft without stem cells. No dislocation was observed in this series of patients with a retentive cup. Discussion and conclusion: This study has shown that a sterile allograft-autologous marrow composite gives an excellent clinical and radiological outcome, and can contain after preparation more or an identical number of stem cells as an autograft.

Date: 2012-11-28

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Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 33133

THE USE OF A DISTALLY FIXED, MODULAR REVISION HIP ARTHROPLASTY SYSTEM IN TWO DISTRICT GENERAL HOSPITALS. EARLY RESULTS WITH 102 STEMS

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Proximal femoral bone loss secondary to infection, osteolysis and fracture remains a challenge for revision arthroplasty. Limb length discrepancies, offset imbalance and poor muscle function make modular systems attractive to the orthopaedic surgeon to address biomechanics and stability. The results using a distally fixed, fluted, modular titanium stem have been reviewed. The mean follow-up for 102 stems from two clinical sites was 3.4 years (range 2-6 years). Preoperative indications included aseptic loosening (61), periprosthetic fracture (21), failed hip fracture fixation (10), infected total hip arthroplasty (8), and failed cephalomedullary nails for pertrochanteric fractures (2). There were no Paprosky grade I defects, 14 grade II defects, 33 grade IIIA defects, 24 grade IIIB defects and 10 grade IV defects. Preoperative Oxford Hip scores improved from mean 12.6 (95% CI 11.2 to 14) to mean 33.1 (95% CI 32 to 35.2) at final follow-up ($p < 0.001$). There were eight dislocations of which four stems were revised for subsidence. Two stems were explanted for recurrent periprosthetic infection. No cases of implant fracture. Cumulative survival after 6.4 years was 94% (95% CI 90% to 99%). These early results demonstrate versatility in a variety of indications for a distally fixed, modular stem.

Date: 2012-11-28

Session: Hip: Total Hip Arthroplasty - Revision

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31438

REVISION TOTAL HIP ARTHROPLASTY USING WAGNER SL REVISION STEM

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Purpose: The purpose of this study is to evaluate clinical and radiographic outcomes in consecutive series of femoral revision THAs using Wagner SL revision stem. **Materials and Methods:** We analyzed the outcome after revision THA using SL Wagner revision stem in 46 hips. The mean age was 58.7 years. Trochanteric osteotomy and extended trochanteric osteotomy (ETO) were performed in 6 hips and 23 hips, respectively. The mean duration of follow-up was 6.5 years (3-9.4 years). At the final follow-up examination, clinical evaluation by using Harris Hip Score (HHS), assessment of complications, and radiological evaluation of the stem and cup were performed. **Results:** The average HHS improved from 61.2 preoperatively to 89.1 at the final follow-up. Five patients reported thigh pain at final follow-up. Radiographic analysis showed no measurable wear or osteolysis and no loosening although five hips showed the stem subsidence of less than 5 mm. Intra-operative periprosthetic fracture occurred in 4 hips and early infection in 1 hip. During follow-up period, there were periprosthetic fractures in 2 hips, nonunion of ETO in 2 hips, breakage of wires in 2 hips, late infection in 1 hip, and heterotopic ossification in 4 hips. **Conclusion:** The current study shows favorable outcome after revision THA using the Wagner revision SL stem. Although intra-operative periprosthetic fracture did not influence the stability, it is essential to understand the possible mismatch between the straight long stem and anterior bowing of femur to prevent the fracture.

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Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 33049

A REVIEW OF REVISION HIP ARTHROPLASTY FOR CERAMIC FRACTURES

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Aim: To review the outcome of revision hip arthroplasty for ceramic fractures. **Method:** Retrospective case notes review. **Results:** We had 9 cases including one re-fracture over a period of 9 years. Mean age was 58 years. All the cases were uncemented total hip replacements with ceramic on ceramic bearing. Head size ranged from 28-36. Neck length was either small or medium. The acetabular shell size ranged from 50-64. Reason for the ceramic fracture was identified in only two cases. In one case the liner was not fully seated and the other case was due to hip dislocation. The cup inclination and anti-version were satisfactory for all the nine cases. The time of occurrence of fracture ranged from 6 weeks to 7.5 years post-op. Revision surgery was carried out within days of diagnosis of the fracture. 6 cases had ceramic head fracture. All 3 cases of liner fracture occurred in BioloX delta ceramic. In none of the cases the trunion or the femoral component was damaged. All three liner fractures had ceramic on ceramic revisions. The six head fractures had various revision bearing surfaces. The only post-op complication was transient foot drop in the re-fracture patient. The mean duration of follow up was 46 months (range: 6 months - 96 months). All 9 patients had good clinical and radiological results. **Discussion:** Our study illustrates that ceramic fracture can occur with out any identifiable reasons even in the new generation delta ceramics. Timely revision surgeries can give good long term results.

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Room: Maktoum A

Abstract no.: 32667

GOOD LONG-TERM RESULTS OF POROUS PLASMA SPRAY (PPS) COATED BIOMET FEMORAL COMPONENT IN REVISION HIP ARTHROPLASTY: NO LOOSENING OF 12 STEMS IN 18-YEAR FOLLOW-UP

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Introduction: The purpose of this study was to document long-term results of Porous Plasma Spray (PPS) coated Biomet stems used in revision hip arthroplasty in Kuopio University Hospital (KUH). Results: 48 revision hip arthroplasties using PPS coated Biomet stems were performed in 46 patients between April 1988 and December 1994. Average age of the patients was 67 (42-81) years at the operation. In July 2010, after an average follow up of 18 years (17-22), 17 of these patients were still alive and 29 deceased. We invited those 17 patients to evaluation. Of invited patients 11 came and 6 declined. Of those 11 patients (12 hips) we performed physical examination, a questionnaire and standard x-rays of the operated hip(s). 9 patients were still satisfied and 2 were unsatisfied for the current situation of the hip. None of the 46 patients had undergone rerevision arthroplasty of the femoral component. Radiologically there was seen osteolysis phenomenon in 4 femurs according to Paprosky classification (1 Paprosky I, 2 Paprosky II, 1 Paprosky IIIA). There were no signs of loosening of the component in any. Conclusion: Biomet PPS coated femoral component shows good long-term results in revision hip arthroplasty.

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Abstract no.: 32700

FULLY POROUS COATED STEMS IN REVISION THR

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Fully porous coated stems have been shown to have better results in revision total hip replacement as compared to proximal coated stems and cemented revision stems. These fully porous coated stems have the advantage of bypassing the area of osteolysis, initial scratch fit stability and long term stability due to bone in growth. Their long length allows them to achieve stability in the diaphysis, even if there is extensive bone loss proximally. We have used the fully porous coated stem in 17 revision total hip replacements. M:f 2:1. Average Extensive femoral osteolysis was the cause in 14 patients. In 3 patients recurrent subtrochanteric non union was the cause. Revision was performed after average 13 years of index procedure. Locking plate was used in 3 cases to stabilise the bone. Cables were used in 8 cases. Rest did not require any support for stability. Allograft strut grafts were used in 2 cases of extensive osteolysis and bone loss. Initial stability was achieved in all cases. All stems have survived till 3 years post surgery. Harris hip scores improved from 56 to 80 post surgery. There was no subsidence, implant loosening, infection or dislocation. The stems did well in all patients. We have found it to be a better alternative to cemented revisions and proximal coated stems in cases where there is extensive proximal bone loss.

Date: 2012-11-28

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Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 33158

RESULTS OF GREATER TROCHANTERIC REATTACHMENT USING A NEW GENERATION CABLE GRIP SYSTEM IN REVISION HIP REPLACEMENT

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Aims: Osteotomy of the greater trochanter is a secure approach in revision hip surgery. It provides excellent exposure and allows good orientation of acetabulum and femur, the femoral cylinder remains intact. Correct reattachment of the trochanteric fragment is essential and can be facilitated by a new generation of cable grip system. **Methods:** We conducted a retrospective review of 32 consecutive patients (mean age 76 years) who underwent revision hip surgery with reattachment of the greater trochanter using a new generation of cable grip system in a district general hospital between 2005 and 2011. We assessed clinical and radiological outcome preoperatively, one week and 12 months postoperatively. **Results:** Bony union of the greater trochanter was achieved in 26 patients (81%) 12 months postoperatively. Fibrous union or non-union occurred in 6 patients (19%). 3 of our patients (9.3%) developed persistent Trendelenburg gait. Dislocation rate was 6.2%. Cable brakeage occurred in 14.7% of the cases. One patient needed revision surgery of the cable grip system. **Conclusion:** The use of the new generation cable grip system was associated with a lower incidence of non union of the greater trochanter compared with other fixation methods and provided a safe method for the reattachment of the greater trochanter with good functional and radiographical results.

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Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31372

EXTRACTING THE WELL FIXED CORAIL STEM

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The Corail stem (Depuy) has been implanted for over 25 years with excellent long term survival. The Corail is a fully hydroxyapatite coated stem resulting in extensive osteointegration. However, this potentially makes extraction a difficult procedure. A reproducible technique in extracting a well fixed corail stem is described which has been used successfully in removing 18 stems. The posterior approach to the hip was used. The key requirements are the corail extractor (depuy) (with slaphammer) and a set of flexible osteotomes. It is important to clear the threaded recess at the top of the stem so that the straight extraction bolt can be inserted. Appropriate osteotomes should be used to divide the implant-bone interface along the sides of the stem. This should be advanced gradually with subsequent attempts at extracting the stem using the Corail extractor. We did not use threaded k-wires down the sides of the implant, but this has been described before. The average age was 64 (range, 52-79 years) at time of the revision surgery. 12 patients were female and 5 were male. 17 of the stems were collared and 1 collarless. The stems were revised for the following reasons: infection in 9 patients, instability in 3 patients and a sunken stem in 2 patients. In 4 patients the stems were revised as part of an acetabular revision. This technique is recommended in extracting Corail stem in revision surgery. It is safe, and reproducible. It also leaves the surgeon with more options for femoral reconstruction.

Date: 2012-11-28

Session: Hip: Total Hip Arthroplasty - Revision

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 30954

APPLYING OF COMBINATION OF HYDROXYLAPATITE AND FEMORAL HEAD AUTOGRAFTS AT TOTAL HIP ARTHROPLASTY WITH ACETABULUM DEFECTS

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Background: When large cavitory acetabulum defects occur, there is a risk of autografts resorbtion and loading and in its course causes cup loosening. Aim: The purpose of this study was to analyse the results of total hip arthroplasty using a combination of hydroxylapatite biphasic ceramics and autografts for plastic cavitory defects of medial wall of acetabulum. Material and methods: 17 patients (19 hips) with protrusio acetabulum at arthritis had total hip arthroplasty using a combination of biphasic ceramics and autografts in correlation 1:2 accordingly for plastic cavitory defects of medial wall of acetabulum. Average age was 55 years (29 – 78), there were 15 females and 2 male patients. Porous biphasic ceramics were used as granules in a diameter of 4 – 6 millimeters with porosity of 40 – 70 %, in which correlation hydroxylapatite / tricalcium phosphate were 60:40. 15 cups were set with cement, 4 cementless. Results: The average medium duration of follow up was 4,5 years (range 3 to 6 years).The Harris Hip Score rose from 34 to 86. None of the cups migrated and no radiolucent line of more than 2 millimeters in thickness was observed around any cup. The gaps between ceramic granules were filled by bone and bone-ceramic block is formed. So on X-ray – homogeneous shadow was observed. Conclusion: Combination of biphasic ceramic gives the opportunity to achieve bone-ceramic block of height stiffness and due to it's resist loads and to preserve stable cup fixation. Long term follow-up is ongoing.

Date: 2012-11-28

Session: Hip: Total Hip Arthroplasty - Revision

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31779

ACETABULAR RECONSTRUCTION IN HIP REVISION ARTHROPLASTY

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Introduction: In this retrospective study we evaluated the clinical and radiologic outcomes of acetabular defect reconstruction with reinforcement rings and morsellised cancellous allografts. **Method:** The study was conducted on 53 cases of hip revision arthroplasty with acetabular reconstruction (2002 to 2011). The patients had a mean age of 62 years (42-78), with 32 women and 21 men. Mean follow-up was 5.6 years (3.5-8.5) with Harris Hip Score for clinical evaluation and the radiologic assessment of the acetabular angle, hip centre of rotation and implant migration – allografts were considered integrated when their density and architecture was similar to the host bone. Acetabular osseous defects were Paprosky type 2A - 5 cases, 2B - 15 cases, 2C - 8 cases, 3A - 18 cases and 3B - 7 cases. **Results:** Mean Harris Hip Score value rose from 43 points (25-73) preoperatively to 89 points at the last examination (64-96). Results were excellent and good in 44 cases (83%), satisfactory in 6 cases (11.3%) and unsatisfactory in 3 cases (5.7%). Mean acetabular angle was 43o (36-47) and the centre of rotation was lowered by a mean of 14 mm (7-23). 50 cases (94.3%) showed radiologic signs osseous integration, without measurable migration of the acetabular components. Three patients (5.6%) had deep infection, needing a Girdstone procedure. **Conclusion:** Offering firm stability and restoring bone stock, the use of cancellous allografts and reinforcement devices is a suitable method for revision hip arthroplasties, but long term results are needed to prove the effectiveness of this procedure.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty I

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 32182

SAFETY, CONCERN AND RAPID ROAD TO RECOVERY: A PROSPECTIVE STUDY OF SIMULTANEOUS BILATERAL TOTAL KNEE REPLACEMENT IN 81 PATIENTS

Sanjeev JAIN, Sandeep WASNIK

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Purpose of this study was to evaluate the safety of simultaneous bilateral total knee replacement (TKR) using our protocol. We performed a prospective study involving 81 patients (162 knees), 66 women and 15 men, undergoing simultaneous bilateral TKR from January 2007 to July 2011. Dobutamine stress echocardiography (DSE) was done for all patients to identify any silent cardiac morbidity. We used quick rehabilitation program and multimodal pain management for early recovery. Results were evaluated using knee outcome scores and any complication related to bilateral simultaneous surgery. Functional ability to sit cross-legged, walk & climb staircase was assessed individually. There were no complications of deep vein thrombosis or pulmonary embolism or death of any of the patient. None of patient had any myocardial infarction or any fibrillation or any other cardiac event. This study demonstrates that simultaneous bilateral total knee replacement is a safe procedure provided proper patient selection has been done.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty I

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 32179

DOES SUBVASTUS APPROACH HELP IN EARLY REHABILITATION IN ELDERLY NONOBESE PATIENTS UNDERGOING BILATERAL SIMULTANEOUS TOTAL KNEE ARTHROPLASTY? A DOUBLE BLINDED RANDOMIZED CONTROLLED STUDY OF 50 PATIENTS

Sanjeev JAIN, Sandeep WASNIK, Amber MITTAL

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Subvastus approach is an alternative approach in total knee arthroplasty (TKA) which spares the quadriceps and may assist in faster rehabilitation. A total of 50 patients undergoing simultaneous bilateral primary TKA were randomized into two groups, subvastus group and medial parapatellar group. The patients were assessed clinically by a blinded research fellow using visual analogue scores, time to straight leg raise, ability to stand with walker, ability to use a commode chair, ability to climb stairs, flexion at discharge and day of discharge. Peri-operative blood loss and duration of surgery were also compared. The VAS score was similar on day 0 and at discharge in both the groups but it was significantly lower in subvastus group on day 1 and day 3. Also mean hospital stay was 2.04 days less in subvastus group. Patients with subvastus approach were able to perform straight leg raising 0.44 days earlier. Subvastus approach produce appreciably less pain and faster mobilization as compared to parapatellar approach thus assisting in early rehabilitation, shorter hospital stay, less expenditure and more patient satisfaction.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty I

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 32912

EVALUATION OF TRANEXAMIC ACID IN REDUCING BLOOD LOSS IN TOTAL KNEE ARTHROPLASTY

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INTRODUCTION: Excessive bleeding has been reported in primary knee arthroplasty. Antifibrinolytic agent Tranexamic acid act by competitive inhibition of plasminogen.

OBJECTIVES: Primary outcome measures: blood loss. Secondary: blood transfusion.

METHODS: Total of 60 patients were recruited in the study (30 per arm). One group of 30 patients receiving tranexamic acid 10 mg/kg, 30 minutes before release of tourniquet followed by an infusion of 1 mg/kg/hr for 12 hours, this group will be designated as A group. The second group will not receive any treatment will be designated as B group. During surgery, blood loss was assessed. In the recovery room and in post-operative ward the drains were measured.

RESULTS: intra operative blood loss (ml) 164+or-62.09(group A) 172.+or -77.64 (group B), post operative blood loss (ml) 379.16+or-174 (group A), 513.33 +or-143.89 (group B), total blood loss 543.3+or-184.85 (group A), 685.83 +or-176.74 (group B), number of units required for transfusion is 6/30 (group A), 12/30 (group B), number of units transfused 6 (group A) and 15 (group B), number of units transfused per patient 0.2 units (group A) and 0.5 units (group B).

DISCUSSION: In our study 40% of patients from control group required blood transfusion whereas only 20% of patients from tranexamic acid group needed blood transfusion. Total numbers of packed cell units transfused were 21, out of which 6 units were required for tranexamic acid group patients and 15 units for standard treatment group patients which was significant, as 60% less blood was required for the study group.

CONCLUSION: Tranexamic acid can be safely advocated for use in total knee arthroplasty as an effective strategy to reduce peri-operative blood loss and thus minimising the need for blood transfusions.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty I

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 33044

DOES AUTOLOGOUS PLATELET RICH PLASMA HELP IN REDUCING BLOOD LOSS, PAIN AND ENHANCE WOUND HEALING AND FUNCTIONAL OUTCOME AFTER TOTAL KNEE ARTHROPLASTY?

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Purpose was to evaluate the efficacy of leucocyte free autologous platelet rich plasma on blood loss, pain, wound healing and functional outcome after total knee arthroplasty. Methods: Forty consecutive age, sex and BMI-matched patients of the knee arthritis were enrolled for this prospective randomized controlled double blinded clinical trial. Preoperative haemoglobin, range of motion, WOMAC and KSS scores were noted. Platelet-rich plasma was applied over the wound including the capsule, medial and lateral recesses in seventeen patients. Twenty-three served as controls. Postoperative haemoglobin, blood loss, blood transfusion, VAS score, Wound score, KSS and WOMAC score were recorded and evaluated. Results: Autologous platelet gel (APG) group had a smaller decrease in haemoglobin (Preop Hb–POD3 Hb) compared to control (1.97/3.56; p=0.00). Postoperative blood loss was 173.2ml vs 220.4ml (p=0.02). Blood transfusion was significantly less in the APG group (0.59units/1.43units; p=0.001). APG group experienced less pain immediately, at 6 weeks and 12 weeks postoperatively and required fewer narcotics than control. There was statistically significant difference in ROM at 5th day, 6 weeks and 3 months. There was no significant difference in the wound scores of two groups. Significant difference was observed in KSS and WOMAC scores at 6 weeks (158.96/148.77, 17.3/23; p=0.00, 0.00) and 12 weeks (166.96/161.42, 10.86/14.61; p=0.00, 0.00). However no significant difference was found at 6 months. Conclusions: We found significant reduction in blood loss, postoperative pain and need for narcotics and quicker and better functional outcome after the use of autologous platelet gel in patients of total knee arthroplasty.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty I

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 32835

FATAL PULMONARY EMBOLISM FOLLOWING ELECTIVE TOTAL KNEE REPLACEMENT: A TEN-YEAR STUDY

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Aim: To assess the incidence of fatal pulmonary embolism (PE) following elective total knee replacement (TKR) with a standardised multi-modal prophylaxis regime in a large teaching DGH over a 10 year period. **Material and methods:** Information was gathered from a prospective audit database, utilising clinical coding for TKR and those that had died within 42 and 90 days. The 10 years from April 2000 were analysed to establish both 42 and 90 day mortality rates. A multi-modal prophylaxis regime for all patients included regional anaesthesia (when possible), mechanical prophylaxis (Flo-tron calf garment peri-operatively, AV impulse boots until mobile and anti-embolism stockings for 6 weeks), mobilisation within 24 hours and 75mg aspirin for 4 weeks. A case note review was performed to ascertain the causes of death. Where a patient had been referred to the coroner, the coroner's office was contacted for PM results. **Results:** There were 6,584 cases; the mortality rates at 42 and 90 days were 0.41 and 0.58%. There were no fatal PE's within 42 days of surgery. 2 fatal PE's occurred subsequently at 48 and 57 days (0.03%). The leading causes of death were myocardial infarction and cerebro-vascular accident. **Conclusion:** Fatal pulmonary embolus following elective TKR with a multi-modal prophylaxis regime is not a significant cause of mortality.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty I

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 32686

THROMBOPROPHYLAXIS WITH BEMIPARIN WAS ASSOCIATED WITH GREATER BLOOD LOSS THROUGH DRAINS AS COMPARED TO ENOXIPARIN AFTER TKA. RANDOMIZED TRIAL

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Introduction: The aim of our study was to compare thromboprophylaxis with bemiparin and enoxiparin in respect to blood loss, pain and range of motion after total knee arthroplasty (TKA). Methods: In a prospective randomized study we included 80 osteoarthritis patients admitted for TKA. Thromboprophylaxis was performed with either bemiparin or enoxiparin depended on randomization results. All patients underwent unilateral cemented TKA performed by one surgeon with the same implant type, anaesthesia and surgical technique. 16 patients were excluded due to change in anaesthesia regime after the surgery. Blood loss through drains was measured at 6 and 24 hours postoperatively (before the drain removal) and the need for blood transfusions was recorded. The area of subcutaneous haematoma, pain and range of motions in the operated knee were investigated. Results: 64 patients (32 patients in each group) were investigated and had no significant difference in age, gender, body mass index (BMI) and preoperative range of motion. We found no differences in postoperative pain and range of motion between the groups. No significant differences were observed in haemoglobin, red blood cells, haematocrit and INR before and after TKA. Blood transfusions were performed for 8 patients in each group. Greater total blood loss through drains was observed in bemiparin group - 775(194)ml as compared to enoxiparin – 692(273)ml (p=0.02). Bemiparin group was associated with larger area of subcutaneous heamatoma (p=0.009). Conclusion: Thromboprophylaxis with bemiparin is associated with greater blood loss trough drains and larger subcutaneous haematoma after TKA, when compared with enoxiparin.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty I

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 31295

ROLE OF INTRA-ARTICULAR TRANEXAMIC ACID IN TOTAL KNEE REPLACEMENT ARTHROPLASTY

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Background: Role of intra-articular Tranexamic acid in total knee replacement arthroplasty
Materials and methods: Prospective evaluation was done to see the effect of intra-articular Tranexamic acid on blood loss in 60 patients (120 knees) undergoing total knee arthroplasty. All the patients were operated by one surgeon with same technique by using same implants. Patients were randomly injected 1500 mg/20 ml of Tranexamic acid on one side of the knee only. Nothing was injected on the contra lateral knee. Evaluation was done for swelling and the amount of blood loss in the drain. Results: Average blood loss in the drain on Tranexamic side was 140 ml and the opposite side was 390 ml. Swelling was more observed on the non Tranexamic side. Average time for drain removal on Tranexamic side was 36 hours while it was 48 hours on non Tranexamic side. Early mobilization and weight bearing was less painful in Tranexamic side. No patient had systemic complications of Tranexamic acid. Conclusion: Intra-articular injection of Tranexamic acid reduces blood loss, swelling around the knee without systemic side effects and allows early weight bearing and mobilization of the joint.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty I

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 33035

CHANGE IN TOURNIQUET APPLICATION PRACTICE, WHAT DID WE OBSERVE?

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The purpose of this study was to evaluate the effect of tourniquet use with constant pressure until wound closure on perioperative blood loss in total knee arthroplasty (TKA). Sufficient patients were included in the study to produce statistically relevant conclusions. In this retrospective case control study 547 patients who were treated with TKA because of osteoarthritis of the knee joint were included and of these 262 patients were operated with the use of a tourniquet (300 mmHg) and 285 without. The perioperative blood loss was calculated using patient height, body weight and preoperative and postoperative hematocrit values. The patient collectives were comparable in mean age, gender distribution and ASA classification. In the group with an operation using a tourniquet, 24 patients (9.2%) received erythrocyte transfusions compared to 36 patients (12.6%) in the group without tourniquet use (not significant). The average perioperative blood loss without tourniquet use was 1.5 ± 0.6 l (range -0.2 to 4.3 l). In contrast patients treated with the use of a tourniquet lost on average only 1.2 ± 0.5 l (range -0.2 to 3.4 l) ($p < 0.001$). The use of a tourniquet reduces the perioperative blood loss in TKA if it is kept tight during the operation.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty I

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 31022

CONTINUOUS FEMORAL NERVE BLOCK VERSUS A PERIARTICULAR INJECTION PROTOCOL IN TOTAL KNEE ARTHROPLASTY: A DOUBLE BLIND RANDOMIZED STUDY

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Background: In addition to narcotics, continuous femoral nerve block is largely used to reduce pain. This procedure presents technical difficulties, time consuming, local complications, and may cause quadriceps motor block limiting rehabilitation. Our primary objective was to compare the opioids consumption after TKA when performed with a continuous femoral nerve block versus a multimodal analgesia protocol including peri-articular injection of local anaesthetics. Methods: We compared morphine consumption during the first 5 days after TKA in 60 subjects randomized to 2 treatment groups: periarticular local anaesthetic infiltration (INF,N=30) and continuous femoral block groups (FB,N=30). Narcotics consumption, pain control, medication-related side effects, complications and postoperative rehabilitation were also studied. Results: Opioids consumption and reported pain at rest were significantly less in the INF group during the first 8 hours post operative period: 12.5 versus 18.7mg of morphine($p=0.0365$) and 1.7 versus 3.5 out of 10 score on a visual analogue scale($p=0.0018$). Regarding narcotics consumption and reported pain, no statistical difference was found up to 120 hours post surgery. Quadriceps partial or complete motor-block was identified in 37% (11/30) of the FB group versus none in the INF group ($p<0.0001$). Straight leg raise, active knee extension when sitting, and walking distances were decreased in the FB versus the INF group. Higher but not significant DVT rate (20%, 6/30) in the FB group versus 7% (2/29) in the INF group was observed. Conclusion: This peri-operative local anaesthetic infiltration protocol demonstrated equal pain control to FB while avoiding motor block and its negative functional impacts. Easy to perform, this peri-operative anaesthetic infiltration protocol did not increase operative time. INF protocol is an interesting alternative to FB protocol.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty I

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 30830

LOCAL INFILTRATION ANALGESIA COULD BE SUPERIOR TO NERVE BLOCK IN TOTAL KNEE ARTHROPLASTY SURGERY – A RETROSPECTIVE STUDY OF 87 CASES

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Introduction: Total knee arthroplasty (TKA) is associated with significant postoperative pain. Local infiltration analgesia (LIA), a relatively new technique for postoperative TKA pain control, was introduced at our hospital in 2011, although conventional nerve block (NB) remains the method of choice by some arthroplasty surgeons. This study compares outcomes between LIA and NB in TKA patients. Method One hundred randomly selected TKA cases from 2011 were reviewed; thirteen exclusions did not fit the two groups (Local or Block). Sample characteristics and treatment outcomes were compared. Significant differences were determined by chi-squared and t-tests. Results: Both groups had similar sample characteristics and no significant differences in pain measurements, frequency of dressing, venous morphine and range of motion of the operated knee at 6-week follow-up. Length of Stay ($t(85)=3.170$, $p=0.002$) was significantly longer in the Block ($M=4.65$, $SD=1.10$) than in the Local ($M=3.91$, $SD=1.06$) group. Oral Morphine use ($t(85)=2.744$, $p=0.007$) was significantly higher in the Block ($M=1.83$, $SD=1.57$) than in the Local ($M=0.98$, $SD=1.31$) group. Complication rates were similar for both groups. Conclusions: Local group patients had significantly shorter hospital stays and used less morphine, with no increase in complications. LIA can be considered a safe approach and larger controlled randomised studies should be encouraged.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty II

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 32549

CORRECTION OF SEVERE VARUS KNEE DEFORMITY BY MODIFIED TECHNIQUES IN TOTAL KNEE ARTHROPLASTY

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Introduction: The aim of this paper is to highlight the modified techniques to achieve full correction of severe varus knee deformity of greater than 15 degrees with optimum ligament balancing, stability and motion. Method: A total of 201 cases were operated with varus deformity of more than 15 degrees, aged between 36-80 yrs. 137 were females and 63 were males. There was extensive posteromedial release, minimal distal release of the superficial collateral ligament, reduction tibial component, grafting of the medial tibial defect. Result: Follow-up 2.8 yrs KSS is 98 from 21.4 preoperatively function score improve from 21.4 preoperatively score is 78. Average Varus deformity 23 degrees the tibia femoral angle was corrected from 3 degrees valgus. All patients could climb up and down the steps and could walk for 20 mins with and without support independently. Their gait had improved. AP View – femoral angle was 95.3 degrees, tibial angle was 89.7. Total valgus was 5.7. Lateral View – femoral flexion was 3.4 degrees, tibial angle was 86 degrees, joint line was 9.4mm. Extension gap angle was 1-2 degrees in 4 cases, cement wedge sign was seen in 1 case, mild medio lateral instability of <5mm in 2 cases. Flexion was 85-135 degrees. 3 revisions. Conclusion: The correct soft tissue balancing increases the longevity and decreases revision rate, thus has greater clinical significance. The extensive release of the medial soft tissue for balancing is not free of problem but when weighed with gain it is more beneficial than limited immediate complication.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty II

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 32236

IMPROVED ACCURACY OF FEMORAL COMPONENT ALIGNMENT WITH THE HIP CENTER MARKING TECHNIQUE COMPARED WITH THE CONVENTIONAL IMPLANTATION IN TOTAL KNEE ARTHROPLASTY

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OBJECTIVE: This report examines the radiographic results of femoral component alignment in total knee arthroplasty (TKA) performed by the same surgeon using 3 different techniques. **MATERIALS AND METHODS:** The femoral component alignment on coronal plane was analysed on the post-operative long-leg radiographs in three groups of patients: patients operated using the intramedullary cutting guide without marking of the hip centre (Group I), patients operated using the intramedullary guide with marking of the hip centre (Group II), patients operated using the computer navigation system (Group III). Each group consisted of 30 patients. In Group II, the marker was placed on the expected hip centre by external anatomical landmarks prior to the operation. The final bone cut of distal femur was done when the extramedullary alignment rod synchronizing to the cutting guide indicated the marker. **RESULTS:** The component angles to the mechanical axis were 87.9 ± 3.7 degrees in Group I, 89.6 ± 1.0 degrees in Group II, and 90.1 ± 1.3 degrees in Group III. Group I was statistically inferior to Group II and Group III. Group II was as accurate as Group III, and there were no outliers greater than $\pm 3^\circ$ in Group II and III. **CONCLUSIONS:** In patients who have wide femoral canals or femoral bowings, the intramedullary cutting guide alone is not a reliable way of obtaining the accurate component alignment. We think that the hip centre should be marked prior to the operation and also checked during the operation when the intramedullary cutting guide is used for TKAs.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty II

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 32408

HOW THE GENDER SPECIFIC TOTAL KNEE PROSTHESES IMPROVE THE COMPONENT/FEMUR MATCHING?

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Introduction: Much attention has been given to gender differences in total knee arthroplasty (TKA). New TKA designs, such as Advance Stature Knee (Wright Medical Technology) and Gender Solutions Nexgen Knee (Zimmer Inc.), have been proposed to accommodate the anatomical differences between genders. However, how the improvement in the matching between these component and femurs in the Chinese patients was not known. Methods: The current study constructed the 3D knee models from 200 knees of healthy Chinese subjects (100 males and 100 females). Virtual knee replacement on the femurs was performed with all the Advance Stature Knee, Advance MP Knee (both from Wright), Zimmer Nexgen- LPS GSF and Zimmer Nexgen- LPS GSF (both from Zimmer) on each knee model, respectively. The femoral mediolateral overhang was examined and compared among different knee prostheses. The excellent matching was defined that the mediolateral femoral overhang was less than 2mm. Results: The overhang rate decreased in both the male and female patients when using either Advance Stature Knee and Gender Solutions Nexgen Knee, compared to their conventional counterpart, respectively. When using Advance Stature Knee, the overall excellent matching rate was improved from 5% to 45%, compared to Advance MP Knee.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty II

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 31492

RELEVANCE OF GENDER KNEE – MORPHOMETRIC ANALYSIS OF MALE AND FEMALE KNEE IN INDIAN POPULATION

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Introduction: Knee replacement is a rewarding procedure. Recently gender knee has been introduced especially for women. Difference in anterior condylar anatomy is the reason given for designing gender knee. But the results of TKR in women are not inferior to men. This questions whether there is any difference really exists. We studied the dimensions of men and women knee on the basis of MRI pictures. This is the first MRI based study done in India. Materials and Methods: 207 magnetic resonance images that had been randomly collected were evaluated. The medial and lateral heights of the anterior condyle were then measured directly from the axial magnetic resonance imaging data. Additionally, the mediolateral dimension between the epicondyles and anteroposterior dimension of medial and lateral condyles were measured at this level. The aspect ratio between these measurements was calculated by dividing AP dimension by the ML dimension. Results: Condylar Height: There was no significant difference between the sexes with regard to lateral condylar height. The average difference was only 0.8 mm. The average difference of medial condylar height was only 0.3 mm. Aspect Ratio: There was no significant difference between men and women with regard to the aspect ratio. The average aspect ratio was 0.78 for men compared with 0.80 for women. Conclusion: There is no significant difference exists in the anatomy between the two sexes. Our study does not support that women need separate prosthesis. So there is no relevance using gender knee in Indian patients.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty II

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 31686

THE IMPACT OF KNEE ANATOMY ON FEMORAL COMPONENT ROTATION AND FLEXION GAP BALANCE IN TOTAL KNEE ARTHROPLASTY

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We analyzed knee anatomy in flexion and estimated its impact on femoral component rotation and flexion gap balance in femur-first-bone-referencing vs. tibia-first-gap-balancing-TKA. Knee anatomy in flexion with proximal medial tibial angle (PMTA) and condylar twist angle (CTA) was assessed in 170 patients using full leg and axial knee radiographs. Effects of knee anatomy on femoral rotation in tibia-first-gap-balancing-TKA were estimated with validated radiographic technique. Effects of knee anatomy on flexion gap asymmetry in femur-first-bone-referencing TKA (neutral femoral component rotation) were estimated. Mean MPTA was 88 ± 3 (range, 84-96)^o and significantly lower for males. Mean CTA was 5.8 ± 1.8 (range, 1.3-12.4) internally rotated without significant gender differences. Knee anatomy determines femoral component rotation in gap balancing TKA: the lower MPTA and CTA, the more external femoral component rotation (external rotation type); the higher MPTA and CTA, the more internal femoral component rotation (internal rotation type). In gap balancing TKA, flexion gap asymmetry would not be expected due to variable femoral component rotation. In bone referencing TKA, medial flexion gap asymmetry would occur when preoperative $MPTA > 90^o$ or $MPTA < 90^o$ & $CTA > [90^o - MPTA]$. Lateral flexion gap asymmetry would occur when preoperative $MPTA < 90^o$ & $[90^o - MPTA] > CTA$. Estimated maximum medial and lateral flexion gap asymmetries were 12.6^o and 5.5^o, respectively. In conclusion, knee anatomy in flexion is variable with gender-specific differences, leading to variable femoral component rotation in tibia-first-gap-balancing-TKA while achieving flexion gap symmetry consistently. In contrast, femur-first-bone-referencing-TKA aims for neutral femoral component rotation that would result in medial flexion laxity for internal rotation types and lateral flexion gap laxity for external rotation types.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty II

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 32831

PATELLAR IMPINGEMENT ON TIBIAL POLYETHYLENE; IS IT A PROBLEM IN MODERN POSTERIOR STABILIZED TOTAL KNEE ARTHROPLASTY?

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Purpose: Patellar impingement on tibial polyethylene (PIP) is a complication of total knee arthroplasty (TKA). It can occur due to inaccurate restoration of the joint line and soft-tissue contracture. The purpose of this study is to determine the prevalence and etiology of PIP following posterior stabilized TKA. Methods: We retrospectively reviewed 846 TKAs in 711 patients between January 2008 and June 2008. Among 846 knees, there were 215 Scorpio®, 224 Triathlon®, 188 Vanguard®, 176 Genesis II® and 43 NRG® knees, respectively. A total of 65 TKAs with PIP (7.6%, 65/846) were compared with a matched-control group of 130 TKAs without PIP. Mean F/U was one year. The patients were matched on the basis of age, sex and TKA implant system. Radiological parameters were measured at latest follow-up visit. Surgical factors including lateral release and thickness of polyethylene liner were also compared. Results: The knees with PIP included 24 Scorpio® (11.2%, 24/215), 22 Triathlon® (9.8%, 22/224), 10 Vanguard® (5.3%, 10/188), 4 Genesis II® (2.3%, 4/176), 5 Scorpio NRG® (11.6%, 5/43). The preoperative and postoperative patellar tendon length averaged 38.2 mm and 31.3 mm in PIP group was compared with 40.2 mm and 38.8 mm in control group, respectively (p=0.02, p=0.001). Conclusion: PIP is associated with progressive decrease in patella tendon length and progressive decrease Insall-Salvati ratio which may suggest soft tissue contracture and elevated joint line. Our study reinforced the importance of accurate joint line restoration, and avoidance of iatrogenic injury to the patella tendon to avoid PIP.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty II

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 31413

COMPARATIVE STUDY OF TOTAL KNEE REPLACEMENT PATIENTS WITH AND WITHOUT PATELLAR RESURFACING

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No consensus exists on whether patellar should be resurfaced during total knee replacement. This study aims to study the difference in clinical outcomes and radiographic findings between patellar resurfaced and non patellar resurfaced patients in total knee replacement in Asian population. 70 patients who underwent total knee replacement in 2003 were included in this study and were followed up to a mean period of 7 years. Clinical outcomes were assessed from Oxford Knee Score, Knee Society Score, Western Ontario and McMaster Universities Arthritis Index, International Knee Documentation Committee, daily functions and presence of anterior knee pain. Latest radiographs were also assessed. Results showed better outcomes in patellar resurfaced group, with statistically significant difference in the functional score, stair climbing and patellar displacement. On the basis of these findings, we concluded that routine patellar resurfacing will improve both the clinical and radiographic outcomes in the Asian population.

Date: 2012-11-28

Session: Knee: Total Knee Arthroplasty II

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 31393

**CUSTOM FIT TOTAL KNEE ARTHROPLASTY: OUR INITIAL EXPERIENCE
IN 32 KNEES**

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We share our initial experience of total knee arthroplasty (TKA) using customised cutting block technology in 32 TKAs from May 2010 to March 2011. Ten of these patients had prior TKA done on the other side using conventional or navigation assisted TKA. Customised cutting blocks were generated for each of the knee using preoperative MRI of knee and long leg weight bearing radiographs. Intra-operative parameters including blood loss and skin to skin time was recorded in all the patients. At 6 weeks, long leg radiographs were obtained to evaluate the coronal alignment. There were no adverse intra-operative events. Majority of the customised blocks felt stable and the size of implanted component matched in most of the patients. 29 out of the 32 knees had a mechanical axis restored to within 3 degrees of neutral. Out of 10 patients with prior TKA without custom fit technology, the mean blood loss and the mean skin to skin time was found to be lower in knees that had undergone custom fit TKA. We conclude that this technology can be safely used in most of the cases of osteoarthritis and it offers additional benefits of decreased operating time and reduced risk of blood loss.

Date: 2012-11-28
Session: Spine: Trauma I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 31268

THE INDEX PEDICLE SCREWS MANIPULATION WITH LORDOSIS FIXATION IN THE TREATMENT OF THORACOLUMBAR FRACTURE: THE SURGICAL TECHNIQUE AND RESULTS

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Posterior distraction and stabilization using pedicle screws instrumentation for unstable thoracolumbar burst fracture is less extensive approach and offers comparable neurological outcome to anterior direct decompression. However, this method requires spinal column distraction which may result in late kyphotic deformity. The pedicle screws insert at the level of fracture (index screws) confers mechanical advantage for deformity correction and maintain spinal alignment. We suppose that the index screws manipulation could facilitate reduction and restore vertebral height which promotes reduction of retropulsed bone fragments without over distraction. Therefore, the aim of this study was to present our surgical techniques of index screws manipulation applied for treatment of thoracolumbar burst fracture and evaluate the results. There were 14 male and 17 female patients with thoracolumbar burst fracture recruited in this retrospective study. The mean age was 41 years [16 -79 years]. The mean preoperative Cobb's angle was 17.5 ± 11.82 degree. The kyphotic deformity was corrected to -0.23 ± 7.04 degree ($p < 0.0001$) after operation. At the final follow-up, 1 year after the surgery, mean kyphotic angle was changed to 0.32 ± 8.77 degree. No statistically significant difference was demonstrated when compared to the immediately postoperative results ($p = 0.974$). No neurological deterioration was found after the operation. The overall motor recovery was 70% with additional simple laminectomy. In conclusion, short-segment pedicle screws instrumentation with index pedicle screws manipulation could achieve the strong implant construction for reduction and maintain kyphosis deformity correction. The neurological recovery could be expected with additional simple laminectomy.

Date: 2012-11-28
Session: Spine: Trauma I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 31764

AN ANALYSIS OF CERVICAL SPINAL CORD INJURIES WITHOUT RADIOGRAPHIC EVIDENCE OF TRAUMA – A PROSPECTIVE STUDY

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Aims: In a prospective study, forty five consecutive cases of cervical spinal cord injury without radiographic evidence of trauma (SCIWORET) treated non-operatively were analyzed to correlate the magnetic resonance image findings with (i) the initial neurological deficit and (ii) the extent of neurological recovery at 2 years. **Methods:** The neurological status of all those patients who did not have any radiographic and computerized tomographic abnormality at the time of admission was assessed by ASIA modification of Frankel's grading. The spinal cord abnormality seen in the magnetic resonance imaging was noted. The neurological status at the end of two years was recorded. **Results:** Twenty seven (60%) patients had cord edema, 8 patients had cord contusion, 8 patients had a normal cord and 2 patients had cord swelling in magnetic resonance image. Out of 27 patients who presented with cord edema, 14 patients recovered from ASIA D to ASIA E and 6 patients did not recover and remained at ASIA D. Seven patients who had normal cord recovered completely to ASIA E. Five patients who had cord contusion recovered up to ASIA D while 3 patients showed minimal or no recovery. Two patients with cord swelling recovered by one grade to ASIA D. **Conclusion:** Incidence of SCIWORET is not uncommon in adults. The initial neurological status correlated with magnetic resonance imaging findings. Subsequent neurological recovery is dependent on type of cord damage and initial neurological status. The recovery rate and final motor outcome are inversely related to the length of cord involvement.

Date: 2012-11-28
Session: Spine: Trauma I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 31262

ELECTRIC LASER NEUROSTIMULATION CAPABILITIES IN VICTIMS OF VERTEBRAL CEREBRO-SPINAL INJURIES

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Introduction/Aim: Demonstration of the capability of epidural electric laser stimulation in complex treatment of victims of vertebral cerebro-spinal trauma. Materials and Methods: The analysis of the treatment results of 35 victims of vertebral cerebro-spinal trauma aged from 16 up to 48 is represented. Among injured persons damages in the cervical part of spine were registered in 11 (31,4%), damages in the thoracic part of spine were observed in 8 (22,9%), damages in the thoracolumbar part of spine (ThXI-ThXII and LI-LII) were found in 16 (45,7%). The assessment of neurologic disorders was studied according to the ASIA/IMSOP scale. In group "AB" 5 (14,3%) patients were put, 16 (45,7%) patients formed group "C", 14 (40,0%) - group "D". Besides surgical interventions epidural lightguide-electrodes were implanted in all the 35 patients capturing the area above and below the level of the spinal cord lesion. Laser irradiation was carried out immediately after every electrostimulation session. It was performed by the influence of the low-intensive electromagnetic radiation by sessions with time duration 1-10 minutes every 4-12 hours. Results: The use of conducted electropulse on the spinal cord in the acute period of the trauma resulted in 28 (80,0%) positive outcomes that allowed us to restore lost functions of the spinal cord more completely. Discussion: Positive effect was observed not only in groups "CD", but in groups "AB". Conclusion: Electric laser neurostimulation influence gives a hopeful perspective in treatment of patients with injuries of the spinal cord.

Date: 2012-11-28
Session: Spine: Trauma I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 32695

BONE TURNOVER MARKERS IN PATIENTS WITH CHRONIC SPINAL CORD INJURY

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Aim: To determine the peculiarity of the bone turnover markers in patients with chronic spinal cord injury (SCI). **Methods:** 52 patients were divided into three groups. First group included 10 patients with early chronic SCI (duration of trauma period – under 1 year), the second group included 21 patients with later chronic SCI (duration of trauma period – over 1 year) and the third group consisted of 21 healthy individuals of appropriate age. **Results:** The results of examination showed that patients of first group had significantly higher bone formation and bone resorption markers than person of second group and significantly higher compared with control group consist of healthy person: P1NP (235.4±68.7 ng/ml vs 57.1±4.2, F - 13.7 p=0.0001 and vs 40.8±7.4 ng/ml, F – 13.1 p=0.0001), serum β-CTx (1.77±0.17 vs 0.63±0.06 ng/ml, F – 14.6 p=0.0001 and vs 0.36±0.05 ng/ml, F – 15.3 p=0.0001), parathyreoidhormon (19.8±4.7 vs 42.4±5.3 ng/ml, F – 7.4 p=0.01 and vs 40.8±3.9 ng/ml, F – 4.9 p=0.01). The level of osteocalcin in group 1 was significantly higher compared with 2 group but without different compared 3 group (41.5±10.1 vs 25.6±1.7 ng/ml, F– 4.5, p=0.04, vs 27.7±4.4 ng/ml, F– 2.5, p=0.09). **Conclusion:** The bone formation and bone resorption markers in patient of first group were significantly higher than in healthy individuals of appropriate age and than person with chronic SCI with longer duration.

Date: 2012-11-28
Session: Spine: Trauma I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 32406

ROLE OF FUSION IN THORACOLUMBAR BURST FRACTURES TREATED BY SHORT SEGMENT PEDICLE SCREW FIXATION: A PROSPECTIVE RANDOMISED TRIAL

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The objective of this study was to determine the difference in groups of thoracolumbar burst fractures treated by short segment pedicle screw fixation with or without fusion in terms of radiologic and functional outcomes. 50 patients were enrolled in this prospective randomized parallel group study and a final review of 47 patients (fusion = 23, non fusion = 24) was carried out at an average duration of 23.9 months. Radiological outcomes were assessed on the basis of regional kyphotic angles; Functional outcome was evaluated using Greenough Low Back Outcome Score while neurological grading was done using ASIA Impairment scale. Baseline evaluation showed no significant difference between the two groups ($p > 0.05$, Mann Whitney test, Fischer's exact test). Perioperative blood transfusion requirements and operative duration was significantly higher in fusion group ($p < 0.05$, Mann Whitney test). There was no difference in final outcome, either radiologic or functional ($p > 0.05$, Mann Whitney test). Average donor site pain at the final review in fusion group was 1.56 (Visual analogue scale). The results of this study imply that fusion is not necessary when managing patients with thoracolumbar burst fractures by short segment pedicle screw fixation.

Date: 2012-11-28
Session: Spine: Trauma I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 31548

FORAMINAL STENOSIS CAUSED BY OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURE OF THE FIFTH LUMBAR SPINE

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Introduction: Recently, the number of aged patients suffered from severe radiculopathy due to foraminal stenosis caused by osteoporotic vertebral compression fracture (OVCF) of L5 is increasing. Purpose: The purpose of this study is to clarify the incidence and pathoanatomy of foraminal stenosis caused by OVCF of L5. Materials and Methods: There were 16 patients who had OVCF of L5 among 155 patients over 65 years old with OVCF of the lumbar spine. There were 5 male and 11 female, and their mean age was 79 years. All patients underwent MRI at the first visit. Collapsed areas of L5 were determined using sagittal T1 weighted images. Patients were classified into three types as follows. Upper type; collapse was observed in the upper part of the vertebra, lower type; collapse was observed in the lower part of the vertebra and whole type; collapse was observed in the whole area of the vertebra. A paucity of peripheral fat surrounding the L5 nerve root and a foramen of diminished size on parasagittal T1 weighted images were defined as foraminal stenosis. Results: Nine stenotic foramens (40.9%) were found in 22 foramens of 11 patients who were classified into upper type. Eight stenotic foramens (100%) were found in 8 foramens of 4 patients who were classified into lower type. Two stenotic foramens (100%) were found in 1 patient who was classified into whole type. Conclusion: This study demonstrated that collapse of the lower part of the L5 vertebra caused foraminal stenosis.

Date: 2012-11-28
Session: Spine: Trauma I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 31584

SUCCESSFUL TREATMENT OF UPPER CERVICAL INJURY ASSOCIATED WITH SEVERE HEAD TRAUMA BY USING HALO-VEST

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Traumatic atlanto-occipital (AO) dislocation is a rare injury in surviving patients because it is generally fatal. A 26-year-old pedestrian was knocked down by car on 3 March 2011. The unconscious intubated patient in critical condition with a Philadelphia collar was transported to the emergency department. There she continued bleeding from oral and nasal cavities, right ear, and the right external carotid artery, which required massive blood transfusion. Total blood loss was 3000 ml. MDCT examination detected extensive skull base and occipital bone fractures associated with C0-C1 and C1-C2 subluxation. She required mechanical ventilation and tracheostomy. On 4 March, a HALO-VEST was applied to stabilize the AO junction with evacuation of epidural and subdural hematomas above the posterior cranial fossa. This required a partial craniotomy of the occipital bone and so it was impossible to perform internal osteosynthesis. 11 April 2011, the patient showed signs of impaired consciousness due to increasing hydrocephalus and was treated by L-P shunt. On 15 April, the patient developed diffuse abdominal pain with inhibition of intestinal peristalsis due to massive pneumoperitoneum. Urgent surgical exploration of the abdominal cavity was performed. On 25 May, she exhibited septic temperature, coagulase-negative staphylococci in CSF and mydriasis due to the progression of hydrocephalus; an external ventricular drain was inserted. On 7 June 2011, the HALO-VEST was removed, the L-P shunt was explanted and ventriculoperitoneal shunt was implanted instead. X-ray examination showed a bone union at the O-C junction. The patient was able to stand and walk without aid and collar.

Date: 2012-11-28
Session: Spine: Trauma I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 31538

MEASUREMENT DISCREPANCY OF SAGITTAL PARAMETERS BETWEEN PLAIN RADIOGRAPHY AND 3D CT IN THORACOLUMBAR AND LUMBAR FRACTURES

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Introduction: Decision making in the management of vertebral fractures, such as operations, sagittal parameters like Cobb angle and wedge compression ratio are important. Plain radiography had been the only image tool for measuring such parameters until 3D CT became popular recently. In this study, we investigated the measurement discrepancy between plain radiography and 3D CT. Methods: Plain radiography and 3D CT of 45 thoracolumbar and lumbar fracture patients (male=21, female=24) were evaluated. We measured sagittal angle and vertebral height on lateral radiography and sagittal CT. Sagittal angle was measured between the upper body and lower body of fractured vertebrae. Anterior and posterior heights were measured to assess AP (anterior-posterior) wedge ratio. Results: The sagittal angle of plain radiography ($13.1 \pm 14.3^\circ$) was significantly larger than that of 3D CT ($8.2 \pm 13.0^\circ$) by 4.9° ($p < 0.001$). AP wedge ratio of plain radiography was on average $65 \pm 17\%$, which was significantly lower than the 3D CT ($73 \pm 17\%$) by 8% ($p < 0.001$). The severer the initial kyphotic deformity, the more discrepancy of results between the two methods was observed. Conclusion: Significant discrepancies were observed in sagittal features of fractured vertebra between plain radiography and 3D CT. Measured values of plain radiography showed more kyphotic features of the fractured body.

Date: 2012-11-28
Session: Spine: Trauma I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 31288

SAFETY PROFILE, FEASIBILITY AND EARLY CLINICAL OUTCOME OF CO-TRANSPLANTATION OF OLFACTORY MUCOSA AND BONE MARROW STEM CELLS IN SPINAL CORD INJURY – A NOVEL IMPLANTATION

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Objective: Study the safety and feasibility of a novel minimally invasive translational modality in spinal cord injury. Design: Prospective case series. Participants/methods: The study was approved by the Institute Ethics Committee of our Institute. The study included 10 dorsal spine injury patients aged between 18 and 50 years, with ASIA A neurological impairment, recruited 6 months after the injury over the last 2 years. The olfactory mucosa was harvested under endoscope and implanted in the cord with bone marrow stem cells, after laminectomy under the guidance of neurosurgical microscope. Results: At 18 months of follow up no significant difference in ASIA score was observed, although the differences in the Functional Independence Measure and Modified Ashworth Scale were statistically significant. No significant complication was observed in any of our patients. Conclusions: The co transplantation of bone marrow stem cells and olfactory mucosa is a safe, feasible and viable procedure, though the evaluation of any demonstrable recovery in the neurological deficient requires further large scale, prospective randomized controlled studies.

Date: 2012-11-28
Session: Spine: Trauma I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 32745

BIOMECHANICAL STABILITY OF CEMENT AUGMENTED ANTERIOR ODONTOD SCREW FIXATION – AN IN VITRO STUDY

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Introduction: Odontoid fractures count up to 15% of all cervical spine injuries. In the elder population, odontoid fracture is the most frequent cervical spine fracture. Anterior odontoid screw fixation (AOSF) is regarded as a standard therapy for these injuries. In the case of osteoporosis, anterior screw cut out and fragment dislocation are common. In the lumbar spine, cement augmentation of pedicle screws could increase the pull out force up to 230%. The objective of this study was, whether a cement augmentation of an AOSF procedure would increase the stability of the construct in a laboratory setting. Methods: 2 groups of seven human c2 vertebrae were tested in a materials testing machine after bone mineral density (BMD) measurement, osteotomy at the odontoid base and screw fixation of the lesion. In one group, a cement augmentation was added. The maximum failure load (Fmax) and mechanism of failure in a ap-directed shear load were recorded. Results: Mean BMD was 273 g/ccm in the test group and 270 g/ccm in the control group, with normal distribution in both groups. Fmax was 729 N for non-cemented vertebrae and 745 N in the cemented group. The difference was not significant (p=0.912). In contrast, BMD had a significant influence on Fmax (p<0.001). In all but one tests, dorsal cut out was the failure mechanism. Conclusion: In this study, there was no influence of cement augmentation on the stability of AOSF. The BMD could be proven as a significant factor.

Date: 2012-11-28
Session: Spine: Trauma II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 31217

SPINAL PROFILE AFFECTS THE INCIDENT VERTEBRAL FRACTURE AND VICE VERSA: A POPULATION-BASED STUDY

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Introduction: Vertebral compression fracture (VCF) is the most frequent outcome of bone fragility, and modification in sagittal spinal alignment (SSA) leads to add-on VCF. This study is a component of our population-based study since 1983, and the purposes are 1) to compare SSA changes before and after VCF, and 2) to investigate the association between baseline SSA and incidence of VCF in subjects without baseline fractures. Methods: 228 community-based female volunteers aged over 40 years were recruited and followed with upright serial entire spine radiograms for a mean 12.1 (8-15) years. SSA was evaluated by thoracic kyphosis (TK), lumbar lordosis (LL), and sagittal balance measured by C7 sagittal vertical axis (SVA). Radiological VCF was identified by both quantitative and semi-quantitative method. 198 subjects without baseline VCF were further classified as standard SSA, decreased SSA (more than 1SD decrease in TK or LL), and increased SSA (more than 1SD increase in TK or LL). Results: New VCF occurred in 30 subjects at 52 vertebrae during observation. Gross SSA in subjects with and without VCF changed in the same direction; TK in increase, LL in decrease, and SVA in forward shift. Significant SSA change occurred not with a single VCF but after second VCF. Among 198 subjects without baseline VCF, decreased SSA (RR 3.106, 95% CI 1.193-8.084, p=0.0202 by cox proportional hazards) was an independent risk factor of VCF. Conclusions: Reduced SSA without fracture led to increased risk of VCF by more than three-fold, and importance of evaluating SSA should be emphasized.

Date: 2012-11-28
Session: Spine: Trauma II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 31056

KYPHOPLASTY VERSUS VERTEBROPLASTY FOR PAINFUL OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES, WHICH ONE IS BETTER?

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Objective: To perform a Meta-analysis to compare the clinical outcomes and complications of kyphoplasty versus vertebroplasty for painful osteoporotic vertebral compression fractures (OVCF). Methods: MEDLINE, EMBASE databases and other databases were searched for all the relevant original articles published from January 1987 to December 2011 comparing kyphoplasty with vertebroplasty for painful OVCF. randomized controlled trail (RCT), quasi-RCT, prospective or retrospective cohort studies are qualified to be enrolled in this meta-analysis. The following outcomes were mainly evaluated: visual analog scale (VAS), vertebral height, kyphosis angle, new vertebral fractures, cement leakage Results: 15 articles fulfilled all inclusion criteria. The baseline characteristics including sex, age, number of prevalent fractures, etc. were comparable for both groups ($P>0.05$). VAS score for the kyphoplasty group was comparable with the vertebroplasty group at 1-3 days, 3 months, 6 months, 1 year and 2 years after surgery ($P<0.05$). Vertebral height for the kyphoplasty group was significantly higher than the Vertebroplasty group at 3 months, 6 months and 2 years ($P<0.05$). Kyphosis angle for kyphoplasty group was significantly lower at 3 months, 6 months and 2 years ($P<0.05$). The occurrence of new vertebral fractures for kyphoplasty group had no significant difference with the Vertebroplasty group at 3 months, 6 months and 2 years ($P>0.05$). The occurrence of cement leakage was significantly lower than the Vertebroplasty group ($P<0.05$). Conclusions: Percutaneous kyphoplasty is better than vertebroplasty in the treatment of painful OVCF. Kyphoplasty had better improvement at VAS score, vertebral height and kyphosis angle with lower occurrence of cement leakage.

Date: 2012-11-28
Session: Spine: Trauma II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 33150

COMPARING EFFECTS OF KYPHOPLASTY, VERTEBROPLASTY, AND NONSURGICAL MANAGEMENT IN A META-ANALYSIS OF RANDOMIZED AND NONRANDOMIZED CONTROLLED STUDIES

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Background: While class I evidence supports the superiority of vertebral augmentation procedures (VAPs) over NSM for reducing pain and disability, a few recent randomized trials claimed no difference between VP and NSM. Methods: As of February 1, 2011, a PubMed search (key words: kyphoplasty, vertebroplasty) resulted in 1587 articles- 27 met basic selection criteria (prospective multiple-arm studies with cohorts of ≥ 20 patients). This meta-analysis adheres to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Results: Both BKP (-5.07/10 points, $P < .01$) and VP (-4.55/10, $P < .01$) performed better than NSM (-2.17/10) in reducing pain, while no difference was found between procedures ($P = .35$). Subsequent fractures occurred more frequently in the NSM group (22%) compared with VP (11%, $P = .04$) and BKP (11%, $P = .01$). BKP resulted in greater kyphosis reduction than VP (4.8° vs 1.7°, $P < .01$). Quality of life (QOL) improvement showed superiority of BKP over VP ($P = .04$), along with a trend for disability improvement ($P = .08$). Cement extravasation was less frequent in the BKP ($P = .01$). VAPs within the first 7 weeks yielded greater pain reduction. Conclusions: VAPs provided greater pain relief and fewer subsequent fractures than NSM in patients with osteoporotic VCFs. BKP is marginally favored over VP in disability improvement, and significantly favored in QOL improvement. BKP had a lower risk of cement extravasation and resulted in greater kyphosis correction and height restoration. Despite this analysis being restricted to Level I and II studies, significant heterogeneity.

Date: 2012-11-28
Session: Spine: Trauma II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 30872

COMPUTER TOMOGRAPHY ASSESSMENT OF PEDICLE SCREW PLACEMENT IN THORACIC SPINE: COMPARISON BETWEEN FREE HAND AND O-ARM BASED NAVIGATION TECHNIQUES

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Although pedicle screw fixation is a well-established technique for the lumbar spine, screw placement in the thoracic spine is more challenging because of the smaller pedicle size and more complex three dimensional anatomy. The intraoperative use of image guidance devices may allow surgeons a safer, more accurate method for placing thoracic pedicle screws while limiting radiation exposure. The O-arm is a new generation intra operative CT imaging system designed without compromise to address the needs of a modern OR. The aim of our study was to check the accuracy of O-arm based and S7 navigated pedicle screw implants in comparison to free hand technique described by Roy-Camille at the thoracic spine using CT scans. The material of this study was divided into two groups, free hand group (group I) (18 patients; 108 screws) and O-arm group (27 patients; 100 screws). The patients were operated upon from January 2009 to March 2010. Screw implantation was performed during internal fixation for fractures, tumours, and spondylodiscitis of the thoracic spine as well as for degenerative lumbar scoliosis. The accuracy rate in our work was 89.8% in the free hand group compared to 98% in the O-arm navigated group. This came to the conclusion that O-arm navigation assisted pedicle screw placement is superior to free hand technique in the thoracic spine.

Date: 2012-11-28
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Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 32499

THORACOLUMBAR BURST FRACTURES TREATED WITH POSTERIOR SHORT SEGMENT FIXATION – IS SURGICAL ARTHRODESIS REQUIRED? – A PROSPECTIVE STUDY

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Introduction: Fusion is traditionally a part of the surgical procedure of short segment fixation of an unstable thoracolumbar burst fracture (TLBF). In our institution unstable TLBF's have generally been managed by short segment fixation without fusion (SSWF), as it has the advantages of avoiding bone graft harvesting and its attendant complications. We conducted a study to evaluate the clinical and radiological outcomes of SSWF for unstable TLBF. Methods: 32 patients with an unstable TLBF without neurologic deficit and with mild deficit (AIS-D) who underwent a SSWF were followed prospectively for a minimum period of two years. Patients were assessed for neurological recovery, back pain, ODI score and return to work. Imaging was assessed for load sharing score (LCS) and segmental kyphosis. 23 patients had a LCS ≤ 6 and 9 had a LCS ≥ 7 . Results: The mean kyphosis improved from 22.4o preoperatively, to 5.1o post op and was 8.3o at final follow up. In patients with LCS ≥ 7 , the mean kyphosis of 28° corrected to 8.2° but progressed to 15.8° at follow up. Three of the seven patients with neurologic deficits recovered completely, the other four patients had improved motor function with persisting bowel and bladder deficit. The mean ODI score was 11%, with 25 patients returning to previous occupation. Conclusions: Excellent radiological and clinical outcomes were achieved with SSWF for unstable TLBF. The outcomes are comparable to those in literature where fusion is a part of the short segment fixation procedure. The disadvantages associated with fusion procedure are avoided.

Date: 2012-11-28
Session: Spine: Trauma II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 31623

SURGICAL TREATMENT OF UNSTABLE BURST FRACTURES OF THE DORSOLUMBAR SPINE BY SHORT SEGMENT POSTERIOR INSTRUMENTATION: TO FUSE OR NOT TO FUSE?

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Introduction: The concept of 'Ligamentotaxis' using short segment posterior instrumentation and fusion is widely accepted for managing unstable burst fractures of the dorsolumbar spine. The aim of this work is to study the possibility of performing this procedure without fusion. **Methods:** This is prospective randomized study included 54 patients with burst fractures of the dorsolumbar spine treated with short segment posterior instrumentation without fusion (Group 1); compared to a similar group of 47 patients that were treated by the same technique with posterolateral fusion using iliac crest autograft. Patients were followed up for an average of 5y. **Results:** In Group 1, all patients with neurological impairment improved 1 to 2 Frankel grades; the VAS improved from an average of 7.8 to 1.3 and the overall complications were 4/54. The kyphotic deformity was corrected from an average of 22.6 degrees to an average of 3.1 degrees; the average anterior height of the fractured vertebrae was corrected from an average of 65% to an average of 92% and the compromise of the spinal canal improved from an average of 42% to 14%. Implant failure occurred in 2 patients. There was no significant difference in these parameters between Groups 1 and 2. In Group 2 there was significantly more operative time, blood loss, hospital stay and 10/47 complications including 2 implant failures. **Conclusion:** Short segment posterior instrumentation without fusion is a safe efficient procedure with significantly less operative time, blood loss, hospital stay and complications than when fusion was performed.

Date: 2012-11-28
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Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 32874

A RANDOMIZED TRIAL OF BALLOON KYPHOPLASTY AND NON-SURGICAL MANAGEMENT FOR TREATING ACUTE VERTEBRAL COMPRESSION FRACTURES: VERTEBRAL BODY KYPHOSIS CORRECTION AND SURGICAL PARAMETERS

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Vertebral fractures are often painful and lead to reduced QOL. We compared efficacy and safety of kyphoplasty to non-surgical management over 24 months in patients with acute painful fractures. Methods: Adults with one to three VCF were randomized within 3 months from onset of pain to undergo bilateral BKP or NSM. Subjective QOL assessments and objective functional (Timed up and go) and kyphotic angulation (KA) were assessed over 2 years; we also report surgical parameters and adverse events temporally related to surgery. Results: Kyphoplasty was associated with greater improvements in SF-36 PCS scores over the 24-month follow-up period (overall treatment effect 3.24 points, 95% CI, 1.47–5.01; p=0.0004). Kyphoplasty also resulted in greater functionality by assessing TUG (overall treatment effect -3.00 seconds, 95% CI, -1.0 to -5.1; p<0.0043). At 24 months, the change in KA was statistically significantly improved in the kyphoplasty group (average 3.1° of correction for BKP vs 0.8° for NSM, p=0.003). On average, inflation pressures were 178 (left) and 180 (right) psi; inflation volumes were consistent with cement volumes at 2.4 cc per side. The most common adverse events within 30-days were back pain (20 BKP, 10 NSM) new vertebral fracture (11 BKP, 7 NSM), nausea/vomiting (12 BKP, 4 NSM) and UTI (10 BKP, 3 NSM). There were two serious adverse events in the second year that occurred at index vertebrae (spondylitis, anterior cement migration). Conclusion: BKP improves patient function and QOL when averaged over 24 months and results in better improvement of index vertebral body kyphotic angulation.

Date: 2012-11-28
Session: Spine: Trauma II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 31347

LONG SEGMENT POSTERIOR FIXATION AND FUSION, USING LOCALLY HARVESTED BONE GRAFT IN TRAUMATIC FRACTURE DISLOCATIONS OF THE THORACOLUMBAR SPINE

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Forty cases of traumatic fracture dislocations of thoracolumbar spine, were treated at JPN Apex Trauma Centre, A.I.I.M.S., New Delhi. All patients had long segment posterior surgery, with pedicle screw fixation, two levels above and below the dislocation level. In all cases, 360° global fusion was done. All patients had complete discectomy and interbody fusion along with posterior fusion, using locally harvested bone graft. All patients had an average follow up of sixteen months. Two cases had surgical site infection, which responded to surgical debridement and antibiotics. Four patients developed sacral bed sores, which were treated with local flaps. All patients achieved excellent sitting balance and all patients could be wheel chair mobilized. Twenty patients (50%) could mobilize independently, using callipers and walker. Neurologic improvement of at least one grade was seen in 12 patients and by two grades in 6 patients. All patients had good fusion at last follow up, and there was no implant failure seen in any patient. Conclusion: Long segment posterior fixation with pedicle screws, and 360° global fusion using locally harvested bone graft, is a satisfactory method to treat thoraco-lumbar fracture dislocations of the spine.

Date: 2012-11-28
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Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 30996

CORRECT SCREW POSITIONING IN MIS TRAUMA STABILIZATION

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Introduction: Minimal invasive spine surgery in trauma patients is challenging. A short operation time and a perfect positioning of pedicle screws is demanded. In this study we show for the first time, that the new VIPER®2 Minimally Invasive Pedicle Screw System allows both. Methods: Between May 2009 and March 2011, 121 patients (131 fractures) with fractures between Th 3 and L 5 were treated with the VIPER®2 Minimally Invasive Pedicle Screw System. The most common fracture type was A3. We treated 52 females and 69 men, the mean age at operation time was 56.7 years. Postoperatively, all patients were examined using a CT scan and the screw-positions have been controlled. Results: In 61 patients, ventral stabilization was additionally performed, in 33 patients, vertebroplasty or cyphoplasty was performed. 15 patients underwent laminectomy. Mean operation time was 80 minutes. No patient developed any new nervous debility postoperatively. 5 patients had neurological deficits preoperatively, in one patient we saw remission after surgery. 678 screws were placed. In the CT scan, we found 15 screws (2.2%) in suboptimal position. Because of no neurologic debility, no revision was performed because of the screw's position. In one patient, septic revision without removal of the screws was performed. With this System, spinal fractures can be treated in a short operation time with percutaneous stabilization and a correct positioning of the pedicle screws in almost 98%. In our study, no screw was so much malpositioned that revision surgery would have been necessary.

Date: 2012-11-28
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Abstract no.: 30711

CONVENTIONAL PEDICULAR SCREW FIXATION IN THORACOLUMBAR AND LUMBAR SPINE USING ONLY LATERAL C-ARM IMAGE ASSISTANCE – A STUDY TO EVALUATE THE ACCURACY OF SCREW PLACEMENT

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Introduction: Posterior segmental transpedicular constructs represent the most popular form of thoracolumbar instrumentation. Methods: In this prospective study, the accuracy of screw placement in 104 consecutive patients with thoracolumbar and lumbar spinal injuries who underwent posterior spinal stabilization using the transpedicular screw construct between January 2008 and August 2010 was analysed. Data pertaining to 18 patients were insufficient and hence were excluded. The remaining 86 cases in whom a total of 280 pedicular screws were implanted were included. The position of the pedicular screws was assessed on post-operative computed tomography scans. The screw path length, screw diameter and transverse pedicle screw angle were measured in all cases to analyse the accuracy of the inserted screws. Results: Out of 280 screws that were used from D11 to L4, 259 screws were centrally placed in the pedicle with no medial or lateral pedicle wall violation; the overall accuracy rate was 92.5%. Twenty-one screws violated the pedicle wall (either medially or laterally) and none of the screws penetrated the anterior vertebral body cortex. Six screws (2.1%) penetrated the lateral pedicle cortex whereas 15 screws (5.3%) penetrated the medial pedicle cortex. Discussion: The accuracy of pedicular screw fixation using conventional free-hand transpedicular screw insertion technique with only lateral C-arm images was found to be comparable to the accuracy using computerized navigation system. Conclusion: Lateral image assistance helps in assessing the correction of kyphotic angle (by using pre-contoured rods) and restoration of vertebral height (by distraction at fracture site). There is lesser exposure of radiation.

Date: 2012-11-28
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Abstract no.: 32783

INTRAOPERATIVE REVISIONS OF PEDICULAR SCREWS IN THORACIC AND LUMBAR FRACTURES USING FREE HAND TECHNIQUE

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The aim of this work is to assess the accuracy and safety of free hand pedicle screw placement in thoracic and lumbar fractures using minimal image exposure. Method: This is a prospective radiographic review of thoracic and lumbar pedicle screws inserted in patients suffering from unstable fractures. All of the procedures were performed by a single consultant spine surgeon. Screws were inserted at one side and then intraoperative lateral imaging was used to check the level, and to verify the position of the screws. The same procedure was repeated on the other side. The vertebral bodies were divided into 3 equidistant horizontal Zones (A, B and C). Positioning of the screw tips were regarded as ideal when located in Zones A and B. Results: There were 32 males (60.3 %) and 21 females (39.7 %), with a mean age of 30.8+11.9 years; range: - 15-66 years). There were 401 pedicle screws inserted from T3-L5 in 53 cases. Pedicle screw placement into Zones A was 171 screws (42.6%) and in zone B occurred in 46.9% (188 screws), whereas screw insertion into Zone C entailed 10.8% (42 screws) of all screws. Intraoperative revision was made in 12 screws (2.99%). Malpositioning was the reason in 8, and the remaining 4 screws were revised because of wrong level. Conclusion: minimal revision rate was noticed, and only 2 lateral images were needed in most of the cases. This is quite important in developing countries, where image intensifier is serving for more than one room.

Date: 2012-11-28

Session: Miscellaneous: General Infection

Time: 17:00 - 18:30

Room: Maktoum B

Abstract no.: 32348

EFFICACY OF DOTS (SHORT COURSE INTERMITTENT) REGIMEN IN TUBERCULOSIS OF SPINE

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OBJECTIVE: The consensus about optimum duration of ATT in spinal tuberculosis has not been arrived. The objective of the study was to evaluate the efficacy of extended DOTS regimen (2 months of intensive phase and 6 months of continuation phase) as recommended by WHO. **MATERIALS AND METHODS:** 52 (18 males, 34 females) patients of spine TB, mean age 27.9 years diagnosed clinico-radiologically, histopathology or by PCR were enrolled. They were treated by extended DOTS regimen administered alternate day. 42 treated non-operatively while 8 surgically decompressed. Patients were evaluated for blood counts, ESR, X-ray, MRI at the start of treatment and contrast MRI at the end of 8 months for healing changes as complete resolution of pre/paravertebral collections, marrow oedema and replacement by fat/calcification suggested T1WI and T2WI were recorded. 8 patients had paraplegia. 48 patients had been followed for the period of 8 months. **RESULTS:** Seven paraplegic recovered neurologically at 8 months. 18 achieved healed status at 8 months while 30 had persisting disease activity. They were continued on continuation phase. The contrast MRI evaluation was done at 12, 18 and 24 months. 5 healed at 1 year (overall 23/48, 48%), 6 at 18 months and 1 patient after 2 years, remaining are still on treatment. **CONCLUSION:** The TB spine lesion healed in 18 patients (37.5%) patient only at 8 months. The duration of ATT should be decided by MRI evaluation as over 60% require more than 8 months ATT.

Date: 2012-11-28

Session: Miscellaneous: General Infection

Time: 17:00 - 18:30

Room: Maktoum B

Abstract no.: 31381

IMAGING PARADIGM FOR RADIOLOGICAL EVALUATION OF ATYPICAL PRESENTATIONS AND DIFFICULT IMAGING SITES OF SPINAL 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 those were used in different combinations in our study includes X rays, Ultrasonography, Computed Tomography, Magnetic resonance imaging and percutaneous aspiration and biopsy (fluoroscopy or CT guided) **MATERIALS AND METHODS** Study was carried out in the Dept. of Radiodiagnosis, INMAS, New Delhi in association with Department of Orthopaedics, Lady Hardinge Medical College, New Delhi. Twenty patients suspected to be having atypical presentations and difficult imaging sites of spinal tuberculosis (based on clinical signs & symptoms) were included in the study. Protocol applied in each case included X rays of the atypical site, MRI (Pre- and post contrast), Computed tomography, Ultrasonography of the primary lesion and chest X-ray. Results of all the above imaging modalities were correlated with each other and attempt was made to compare radiological features of the atypical sites of skeletal tuberculosis with the already established features.

Date: 2012-11-28

Session: Miscellaneous: General Infection

Time: 17:00 - 18:30

Room: Maktoum B

Abstract no.: 32726

WHAT'S THE EVIDENCE? – SYSTEMATIC LITERATURE REVIEW OF PEDIATRIC SPINE SURGICAL SITE INFECTION

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Background: Pediatric spine surgical site infections (SSIs) occur with rates from 3.7-8.5%. SSI prevention protocols vary due to evolving evidence, literature interpretation, and physician experience. Methods: Pubmed, Cochrane, Clinicaltrials.gov, BioMed Central, Evidence-based Reviews, Ovid Medline, Scopus, Ebsco Medline, Science Direct (medicine & dentistry database), and Thompson Reuters Medline were queried in December 2011. We used limits of: English language & Age: infant-24 yrs and search terms of: infection, spine, spin\$, spine\$, & scoliosis. 9594 studies were returned; 1096 relevant. Removing duplicate results = 458 studies. Studies with SSI rates only, post-SSI management, or non-operative spine infection were excluded (332/458). Studies of pediatric spine SSI prevention (57/458) were independently rated for level of evidence by 3 pediatric spine surgeons. Studies of non-pediatric spine SSI prevention (69/458) were retained as discussion points. Results: Of 57 included studies, 1 contained level 1 evidence, 3 level 2, 35 level 3, & 11 level 4. 7 were excluded due to irrelevance. Level 1 or 2 evidence in this area regarded operating room traffic, ceramic use over bone graft, use of subcutaneous closed suction drainage, and revision surgery/implant use while only level 3 or 4 evidence exists for most commonly used SSI prevention measures like graft type (allo- vs. auto, etc.), intra-operative autotransfusion, type of implant (steel vs. titanium), and timing of pre-operative antibiotics. Conclusions: Very little strong evidence exists in the literature supporting pediatric spine SSI prevention methods. Higher evidence strategies exist in non-pediatric literature, which warrants consideration for future use in this population.

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Session: Miscellaneous: General Infection

Time: 17:00 - 18:30

Room: Maktoum B

Abstract no.: 31495

SURGICAL TREATMENT OF NON-SPECIFIC SEPTIC OSTEOARTHRITIS OF THE KNEE

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Study objectives: The objective of this research was to study techniques for surgical management of non-specific osteoarthritis of the knee joint. Materials and methods: Examination and surgical management of 42 patients aged 10 - 75 years were carried out during the period from 2007 until 2011. 32 (76%) of the patients were male, 10 (24%) of the patients were female. In 16 (38%) patients arthrodesis was performed through Texter or parapatellar approach with bone-saving resection of articular ends followed by osteosynthesis using wire-rod Ilizarov fixator at 170 degrees angle. In 12 (75%) patients wounds were healed by first intention, in 4 (25%) patients – by secondary intention. The average duration of fixation using the device was 3.5 months. Results and Discussion: Arthrodesis is recommended in case of spread of the process to articular surfaces. Stable fixation using wire-rod Ilizarov fixator allows active walking and step onto the whole foot. In our practice we observed only one case of severe pseudarthrosis, painless while walking. Septic-inflammatory process was eliminated in all patients; they had no complaints of pain. The average limb shortening in patients after arthrodesis accounted for 1.5 cm; and the patients move freely. Our experience has shown that the obtained results depend on the patients' referral in timely manner. Our experience shows that the use of wire-rod Ilizarov fixator for knee arthrodesis gives good results which allow getting good arthrodesis.

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Session: Miscellaneous: General Infection

Time: 17:00 - 18:30

Room: Maktoum B

Abstract no.: 33007

OPEN DRAINAGE VS. PERCUTANEOUS DRAINAGE IN THE TREATMENT OF TROPICAL PYOMYOSITIS. A PROSPECTIVE AND RANDOMIZED STUDY

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Introduction: Tropical Pyomyositis (TP) caused by *Staphylococcus aureus* can lead patients to death in a few days. The results of percutaneous drainage of the abscesses compared with open surgical drainage were prospectively assessed. Methods: A total of 25 patients with TP (Chiedozi grade II) were assessed. Patients were randomized into two groups: group A (n=17), treated with antibiotic therapy and open drainage of the abscesses; group B (n=16), treated with antibiotic therapy and percutaneous drainage guided by ultrasound. Results: Median age in groups A and B were 31 years and 29 years, respectively (p=0.51). In group A, eight patients (61.5%) were female and five were male (38.5%); in group B, three were female (25%) and nine were male (75%) (p=0.11). *Staphylococcus aureus* was the most commonly encountered microorganism (76%). The median length of hospitalization in group A was 14 days, whereas it was 10 days in group B (p=0.01). There was no statistical correlation between age and length of hospitalization neither in group A (p=0.89; r=0.04) nor in group B (p=0.68; r=0.13). The average length of antibiotic use for groups A and B were 12 days and 10 days, respectively (p=0.02). There was no statistical correlation between age and length of antibiotic neither in group A (p=0.76; r=0.09) nor in group B (p=0.8; r=-0.07). Conclusion: Percutaneous drainage of abscesses combined with antibiotic therapy constitutes an effective method for the treatment of Chiedozi grade II Tropical Pyomyositis, statistically reducing the length of antibiotic therapy and patient hospitalization.

Date: 2012-11-28

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Time: 17:00 - 18:30

Room: Maktoum B

Abstract no.: 31281

COMPARISON OF GENTAMICIN RELEASE FROM GENTAMICIN IMPREGNATED BONE CEMENT AND MANUALLY MIXED ANTIBIOTIC-CEMENT PRODUCT

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Introduction: In joint arthroplasty usually antibiotic impregnated bone cement is used for local antibiotic prophylaxis. This in vitro study investigates the gentamicin elution from a manually mixed antibiotic-cement product and compares to that of an originally gentamicin containing cement. Methods: In "Group A" CMW-1(Depuy®) bone cement powder was used originally containing 1g gentamicin-sulfate in each 40g. In "Group B" 1.48g antibiotic powder containing 1g effective gentamicin-sulfate(Chinoin®) was mixed with 40g CMW-1 cement powder. CMW-1 fluid component was added to both types of antibiotic-cement powder complexes. Equal sized cylinders(10x6mm),10-10 from both groups, were created before complete polymerization. Each cylinder was placed into 100ml 0.9% NaCl solution at 25C°. After 24 hours incubation 1ml solution was taken from each sample and stored until measurement at -20C°. Fluorescent polarization immunoassay was used to measure gentamicin concentrations. Student t test was used for statistical analysis. Results: The average gentamicin concentrations measured in both groups were above the minimal inhibitory concentration. The standard deviation was higher in "Group B" but even the lowest "Group B" value was above "Group A" average. The average emitted amount of gentamicin from "Group B"(2.75 µg/ml) was more than 2.5 times higher compared with the average of "Group A"(1.06 µg/ml). Conclusions: Based on our results both types of gentamicin containing cement can be effectively used for local antibiotic prophylaxis. The manually prepared antibiotic-cement complex showed significantly better gentamicin releasing potential regardless of the higher variability in gentamicin emission. We suggest intraoperative manual mixing of antibiotic to bone cement for local antibiotic prophylaxis.

Date: 2012-11-28

Session: Miscellaneous: General Infection

Time: 17:00 - 18:30

Room: Maktoum B

Abstract no.: 31190

'IN VITRO' HPLC ANALYSIS OF RELEASE OF VANCOMYCIN FROM ANTIBIOTIC IMPREGNATED NON COMMERCIALY PREPARED DEMINERALIZED BONE MATRIX

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Objective: Development of a delivery vehicle which can provide effective concentration of desired antibiotic at the site of infection for sufficient length of time is the current research topic. Decalcified bone matrix as carrier of antibiotic can serve this purpose, provided, sustained minimum inhibitory concentration can be achieved for sufficient time. An 'in vitro' study was carried out to study the release from Vancomycin impregnated demineralised bone matrix chips. Methods: Demineralised bone matrix chips were prepared from rabbit bone as per standard procedure and were placed in known concentration of Vancomycin for 24 hrs. For elution study, these impregnated chips were placed in 5% human albumin and the surrounding liquid was exchanged completely after every 24 hrs. The concentration of Vancomycin in the fluid were estimated on 1st, 3rd, 7th, 14th, 21st, & 28th days using High Pressure Liquid Chromatography. Results: The elution study of antibiotics showed logarithmic decrease of concentration over the period of 4 weeks. The highest concentration was on day one (602 ± 24.0 mg/ L) decreasing to 12.8 ± 4.88 mg/ L on 28th day. Conclusion: The study shows that the concentration of Vancomycin in the sample was well above the MIC level for MRSA pathogens throughout the investigation period in all tested samples. In conclusion, demineralised bone matrix chips can be considered as an excellent carrier for vancomycin over a period of 4 weeks, hence can be used to eradicate the pathogens in one stage procedure without any systemic side effects.

Date: 2012-11-28

Session: IFPOS Mini Symposium - Paediatrics: Spine

Time: 08:30 - 10:00

Room: Maktoum C

Abstract no.: 32615

INTRODUCING THE EARLY ONSET SCOLIOSIS CLASSIFICATION SYSTEM

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Purpose: While the classification of adolescent idiopathic scoliosis has facilitated communication, focused research and informed surgical decision making, the field of early onset scoliosis lacks a similar organizing classification system. The purpose of the current initiative is to create an EOS classification system answering these needs. **Methods:** 14 senior members of the Chest Wall & Spine Deformity Study Group and the Growing Spine Study Group took part in an extended Nominal Group Technique consisting of 2 group meetings and iterative surveying. Participants reviewed project goals, proposed a draft classification structure based on literature review findings, and created a list of potential variables. All identified variables were rated on a 3-point Likert scale, and then ranked based on content validity ratio and sum of ranks. Consensus was achieved regarding overall classification structure, final variables, and number of variable subgroups and cut points. Inter- and intra-observer reliability analysis via survey of the study group is underway. **Results:** 13 potential variables were identified; Etiology, Cobb angle, Kyphosis, Age, and Progression Rate ranked highest and were retained in the final classification. We determined that Age should be a continuous prefix while Spine Flexibility and Progression Rate should be optional modifiers. **Conclusions:** Utilizing a formalized consensus building process among a group of experienced pediatric spine surgeons, a novel Classification System for the field of EOS has been developed. Future study will assess validity as a prognostic tool using real patient data from prospectively gathered EOS databases.

Date: 2012-11-28

Session: IFPOS Mini Symposium - Paediatrics: Spine

Time: 08:30 - 10:00

Room: Maktoum C

Abstract no.: 31240

A NOVEL 3D-CT CLASSIFICATION FOR IRREDUCIBLE PEDIATRIC ATLANTOAXIAL ROTATORY SUBLUXATION: A KEY TO SUCCESSFUL CONSERVATIVE TREATMENT

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Introduction: Unsuccessful initial treatment of atlantoaxial rotatory subluxation (AARF) often leads to surgical correction in pediatric patients. The purpose of this study was to investigate the outcome of intermittent halter traction (IHT) treatment for initially-irreducible AARF patients and its evaluation using a novel 3D-CT classification. Methods: A 3D-CT was classified according to the C1-2 angle in maximally-reduced neck position as grade 0 (bony union), I (<-5° to irreducible direction), II (-5 to 5° to normal direction), III (6 to 15°).and IV (>15°). IHT was prescribed as 7 sets per day, with each set consisting of 40 minutes of traction. If the C1-2 angle achieved grade II after 2 weeks, IHT was continued until grade IV. SOMI-type brace was applied then for 3-4 months. Subjects: Three consecutive AARF patients after more than 3 months of various conservative treatments before referral to our institution during 2005-2010 were included and treated with IHT. Results: Initial 3D-CT revealed C1-2 angle of -31 degrees (irreducible) in average, which improved to 9 degrees at first follow-up and to 17 degrees (grade IV) at the end of IHT. Final follow-up CT showed remodeling of depressed C2 facet surface in all cases. All the patients maintained clinical full recovery at a mean 24 months of follow-up. Discussions: CT evaluation was inevitable because initial 1-2 weeks after IHT usually seems ineffective, which could be a major obstacle for continuing conservative treatment. Most of invasive interventions might be avoidable in pediatric AARF if proper assessment and treatment is employed.

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Session: IFPOS Mini Symposium - Paediatrics: Spine

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Room: Maktoum C

Abstract no.: 32659

THE EARLY-ONSET SCOLIOSIS QUESTIONNAIRE (EOSQ) REFLECTS IMPROVEMENT IN QUALITY OF LIFE AFTER GROWTH ROD SURGERY

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Purpose: The EOSQ was developed to reflect quality of life (QOL) and caregiver impact in children with early onset scoliosis (EOS). The purpose of this study is to assess the responsiveness of the EOSQ to surgical interventions, and to establish normative reference scores. **Methods:** In this prospective, multicenter study, 64 EOS patients (age 5.7 years, 0-11) undergoing treatment with growing rods (GR) (n=26), VEPTR (n=34) or Shilla (n=4) were enrolled from 5 centers. Parents of GR and VEPTR patients completed the EOSQ at 3 visits: pre-implantation and prior to first and second expansions. Total, domain, and item scores with differences and effect sizes were calculated for VEPTR, GR, and all patients. 138 healthy patients were recruited to serve as normative references. **Results:** Improvements in EOSQ scores were noted across multiple domains before and 6 months after surgery. Effect sizes were small to medium. Patients with neuromuscular scoliosis exhibited largest improvements in QOL. 9 of 10 domains (20/22 items) had good distribution with no floor or ceiling effects. Normative patients showed no flooring effects and significant differences were noted between norms and EOS patients across all ages. A 2-item 'Satisfaction' domain was added to reflect perceived treatment effectiveness. **Conclusions:** The finalized EOSQ-24 shows differences in QOL before and after surgery and appears to be an appropriate measure of outcome in comparing treatment options in EOS patients. It is applicable to children aged 0-18 years. Psychometrics appear excellent. Future efforts include applying the EOSQ-24 to non-surgical patients and translating into foreign languages.

Date: 2012-11-28

Session: IFPOS Mini Symposium - Paediatrics: Spine

Time: 08:30 - 10:00

Room: Maktoum C

Abstract no.: 31574

SURGICAL TREATMENT OF CHILDREN WITH SPRENGEL'S DEFORMITY

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Introduction: There are few studies on the problem of surgical correction of deformities in Sprengel's disease. Authors proposed surgical procedures for this cosmetic defect. Dissatisfaction of patients and surgeons ranges from 12.5 to 58.7% of cases of bad results. Material and methods: We examined 65 children with Sprengel's disease. The soft tissue form encountered in 37 cases, the bony one in 28. It is established that the main pathogenetic factors are changes in the trapezius, rhomboid, supraspinatus and infraspinatus, deltoid, serratus anterior, levator scapula. In 6 children the high position was not only of the scapula but of the whole shoulder girdle and clavicle. Results: We have developed and put into practice the unique surgical methods for achieving of a cosmetic effect and restoration of function of hypoplastic muscles of the shoulder girdle. These methods allow to bring down the scapula and not only to restore the function of trapezius and rhomboid muscles, to restore the congruity of sliding surfaces of the scapula and the chest, but also to save the suprascapular neurovascular bundle, as well as to carry out the physiological fixation of the scapula in the position of attained correction. When clavicle is also involved, the shortening osteotomy is performed in its distal middle third. This prevents such complications as brachial plexus palsy in extremely severe deformities. Thus, a differentiated approach to the treatment of this condition, the use of the proposed methods allowed to obtain 80% of good results.

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Session: IFPOS Mini Symposium - Paediatrics: Spine

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Room: Maktoum C

Abstract no.: 30859

THE EFFECTS OF OBESITY ON DEFORMITY CORRECTION IN ADOLESCENT AND JUVENILE IDIOPATHIC SCOLIOSIS

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Obesity is associated with increased complications in the perioperative period, especially in adults. Elevated body mass index (BMI) has been related to greater thoracic kyphosis before surgery compared to children with a healthy weight. This retrospective analysis was done to examine the relationship between BMI and surgical outcomes in adolescent and juvenile idiopathic scoliosis. Demographic data, radiographic measurements, perioperative data, and complications were collected. The BMI was calculated for each patient. Pearson correlation coefficients were calculated to evaluate the correlation between BMI and each outcome measure. Two hundred thirty-six patients (187 females, 49 males) with average age 14.43 (range 11-22) with a minimum of one-year follow-up met inclusion criteria. The average BMI was 21.63 (range 10-46). The Pearson correlation coefficient was highest for preoperative thoracic kyphosis (0.75). The correlation was lower (0.25) for total operative time and amount of intraoperative fluid. Intraoperative blood loss, postoperative drainage, and total blood loss did not show any significant correlation. The correction of deformity was similar regardless of BMI as well. The percentage of complications was much higher in obese children (39%) compared to healthy children (15%). Obese children were unable to receive a preoperative spinal anesthetic 17% of the time compared to 1% of the healthy children. Increased body mass index in adolescents and juveniles undergoing spinal deformity surgery correlated strongly with increased preoperative kyphosis, number of postoperative complications, and difficulty with administration of spinal anesthesia.

Date: 2012-11-28

Session: Paediatrics: Cerebral Palsy & Upper Extremity

Time: 10:30 - 12:00

Room: Maktoum C

Abstract no.: 33004

FUNCTIONAL OUTCOME OF A NEW SINGLE EVENT MULTILEVEL LEVER ARM RESTORATION AND ANTI SPASTICITY SURGERY FOR CEREBRAL PALSY

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In Cerebral Palsy (CP), lever arm dysfunction and spasticity of non-antigravity or the body propelling muscles are the major factors which restrict gait and motor function. The aim of this study was to assess the functional outcome of a new orthopedic surgical approach called Single Event Multilevel Lever Arm Restoration and Anti Spasticity Surgery (SEMLARASS). 211 persons with different type of cerebral palsies participated in this study: Spastic Diplegia (53.55%), Spastic Quadriplegia (34.60%), Spastic Hemiplegia (4.74%) and Spastic Athetoid Quadriplegia (7.11%). The mean age at the time of surgery was 9.11 ± 4.45 years. The surgical procedures included Intramuscular Release and Controlled Tendon Lengthening using the principles of Orthopedic Selective Spasticity Control Surgery, and simultaneous restoration of lever arm dysfunctions. All the surgeries were performed by a single Orthopedic Surgeon. All the 211 participants underwent a minimum 6 months of intensive protocol based rehabilitation after the surgery. Gross motor function classification system (GMFCS) levels were recorded. The main outcome measures were Functional Mobility Scale (FMS) and Manual Ability Classification System (MACS). All the measurements were taken before the surgery and after completion of the rehabilitation at a minimum follow up of 2 years (mean 3 years). Results revealed that there was a significant improvement in the FMS ($t=6.54$, $p<0.001$), MACS ($t=4.06$, $p<0.001$) and GMFCS ($t=3.11$, $p<0.001$) levels. There was a significant improvement in popliteal angle and hip range of movement. In conclusion, SEMLARASS followed by intensive postoperative rehabilitation provides a person with CP a dramatic, predictable and lasting functional improvement.

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Session: Paediatrics: Cerebral Palsy & Upper Extremity

Time: 10:30 - 12:00

Room: Maktoum C

Abstract no.: 31013

**POST SPINAL SURGERY IN CEREBRAL PALSY HIP
SUBLUXATION/DISLOCATION**

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Although there is believed to be an association between scoliosis, pelvic obliquity and hip dislocation/subluxation in patients with cerebral palsy (CP), the effect of spinal surgery on hip stability is not fully understood. The purpose of this study was to evaluate the effect of scoliosis surgery on hip stability in patients with CP. The Reimer's Migration Index (RMI), Centre Edge Angle (CE) and Sharp's angle were compared in 19 patients during pre-operative, post-operative and at follow-up. Paired sample t-tests did not reveal any statistically significant differences for the above outcomes when comparing pre- to post-operative and follow up. Based on the preliminary results, scoliosis surgery does not appear to directly affect hip stability in patients with CP.

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Session: Paediatrics: Cerebral Palsy & Upper Extremity

Time: 10:30 - 12:00

Room: Maktoum C

Abstract no.: 32342

SINGLE EVENT MULTILEVEL SURGERY IN UNTREATED SPASTIC CEREBRAL PALSY CHILDREN: FUNCTIONAL OUTCOME

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Introduction: In developed countries, children with cerebral palsy are treated from the time of diagnosis. This is usually not the case in developing countries where such patients often present at an age when it is traditionally believed that if walking has not already commenced, it is unlikely to. **Materials and Methods:** This study reports the outcome of the surgical treatment of 81 spastic cerebral palsy patients at a mean of 9.5 years (4-17). All presented as untreated with variable level of walking ability and had achieved sitting balance by the age of five to six years. They underwent single event multilevel surgery followed by physiotherapy and orthotic support. For outcome assessment GMFC (gross motor function classification) system by palisano et al used at a mean of 3 years (2.5- 4.5) post-operatively. **Results:** At all level, static joint contracture had resolved almost completely. All patients improved and become walkers. 34 children (42%) moved one level above, 27 (33%) moved two level above, 7 (9%) moved three level above & 7 (9%) moved four level above, that is to near normal gross motor function. 6 (7%) children still under rehabilitation & improving and showed no changes. **Conclusion:** This study shows that patients with cerebral Palsy of spastic type, who are untreated, present late and cannot walk can be helped by single event multilevel surgery and methodological structural, supervised rehabilitation programme. **Key words:** cerebral palsy, single event multilevel surgery, spasticity, GMFC (gross motor functional classification).

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Session: Paediatrics: Cerebral Palsy & Upper Extremity

Time: 10:30 - 12:00

Room: Maktoum C

Abstract no.: 31129

PERCUTANEAL HAMSTRING RELEASE AND MOBILE BROOM STICK IN TREATMENT OF CEREBRAL PALSY

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310 Pts of cerebral palsy operated since 2000 until 2010. 120 patients have spastic hemiplegia and 90 patients have spastic dyplegia. All patients have contracture of hamstring muscles. Our patients have divided in tow groups: Group A (96 pts) operated from 2000 to 2003 with open hamstring release and fixed broom stick cast for 4 weeks Group B (212 pts) operated from 2003 to 2010 with percutaneal hamstring releases and mobile broom stick. Mobile broom stick is put day and night only for one week and for three weeks it is put only at night. Similar final outcome have been achieved in both groups. However, less morbidity, less complications and less surgical time in group B, which also decrease the cost of surgery. Percutaneal hamstring release and mobile broom stick are new procedures both can facilitate the management of C.P and improve the post O.P course.

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Session: Paediatrics: Cerebral Palsy & Upper Extremity

Time: 10:30 - 12:00

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Abstract no.: 30706

**SUPRACONDYLAR FEMORAL EXTENSION OSTEOTOMY AND
PATELLAR TENDON ADVANCEMENT IN THE MANAGEMENT OF
PERSISTENT CROUCH GAIT IN CEREBRAL PALSY**

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MOHANTY

SVNIRTAR, Cuttack, Orissa (INDIA)

BACKGROUND: Severe crouch gait in adolescent cerebral palsy is a difficult problem to manage. They develop loading of patellofemoral joint leading to pain, gait deviation, excessive energy expenditure and progressive loss of function. Patella alta, avulsion of patella are other complications. The deviated gait pattern is not also cosmetically acceptable. Patients operated by multi level soft tissue surgery develop crouch gait later as it does not address the muscle – tightness component. Supracondylar femoral extension osteotomy (SFEO) and patellar tendon advancement (PTA) was evaluated in the treatment of crouch gait in patients with cerebral palsy. **METHODS:** 14 Adolescents with crouch gait with a mean age of 14 (operated by multilevel traditional soft tissue surgery and fresh) cases were operated by Supracondylar femoral extension osteotomy (SFEO) and patellar tendon advancement (PTA). All subjects were evaluated pre and post operatively. Clinical, radiographic, observational gait analysis and functional measures were included to assess changes in knee function. **RESULTS:** Cases were followed up to four years. The patients walked with increased knee extension and improvement in quadriceps muscle strength. Knee pain was decreased and improvements in functional mobility and radiologic improvement were found. **CONCLUSION:** Supracondylar femoral extension osteotomy and patellar tendon advancement for adolescent crouch gait is effective in improving knee extensor strength, reduce knee pain and improve function.

Date: 2012-11-28

Session: Paediatrics: Cerebral Palsy & Upper Extremity

Time: 10:30 - 12:00

Room: Maktoum C

Abstract no.: 31072

PERTHES' DISEASE IN CEREBRAL PALSY PATIENTS. A CASE PRESENTATION AND REVIEW ARTICLE

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Aim: The aim of this study was to document and evaluate the results of management of Perthes' disease in cerebral palsy patients. **Patients & Methods:** Between Oct. 2005 and Jan. 2010, we have documented and diagnosed Perthes' disease in 5 cerebral palsy patients. 4 of the 5 patients were ambulators (2 hemispastic patients and 2 quadripastic patient), and 1 patient was non-ambulator, with total body involvement and was confined to a wheel chair. Perthes' disease was unilateral in all the affected cases during the follow-up period. The age of the patients ranged between 6 and 9 years old. All the 4 patients were treated with a sub-trochanteric osteotomy because it was indicated for the treatment of Perthes' disease and also a bilateral adductor tenotomy was performed in 2 patients. **Results:** The follow-up period ranged from 2 to 6 years. All the 4 patients showed good containment of the head of the femur following surgery. Pain disappeared during walking in the walking patients, as well as the non-ambulator child. The range of motion improved in the 4 studied hips. **Conclusion:** To our knowledge, Perthes' disease was never reported in the literature in cerebral palsy patients. This study documents its occurrence in such patients. **Significance:** Perthes' disease does occur in CP patients, the subtrochanteric osteotomy improves the symptoms and provides a good cover of the subluxated head at risk. This might preclude the traumatic theory for Perthes' disease as it has occurred in a non-ambulator child, who is confined to a wheelchair.

Date: 2012-11-28

Session: Paediatrics: Cerebral Palsy & Upper Extremity

Time: 10:30 - 12:00

Room: Maktoum C

Abstract no.: 33114

COMPLICATIONS WITH LOCKING PEDIATRIC FEMUR PLATES AT OSTEOTOMIES OF PATIENTS WITH CEREBRAL PALSY

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The problems and complications, with the fixation of proximal femoral osteotomies which are proven to be efficient in the treatment of spastic hip deformities, are mostly related with the osteopenia and malnutrition status of these patients. So there can be seen many studies concerning alternative fixation methods for reducing the encountered complications. We studied the complication rates of a relatively new promising implant, locking pediatric hip plates, among spastic hip osteotomies. With the follow up of 28.6 months, the complications encountered at the operation and at the follow up period of the 16 spastic hip osteotomies of 11 patients were reviewed. There were 2 delayed union, 1 postoperative femur fracture, 6 prominent implant, 6 limb length discrepancy at 6 hips which operated unilaterally. One overbleeding and superficial soft tissue infection of adductor tenotomy site in the same patient who takes valproic acid. Dislocation at one hip. Undercorrection of deformity at 3 hips of two patients. Abductor arm insufficiency at 4 hips of 2 diplegic walking patients had been encountered. Except two hips with acetabular reconstruction, none of the hips had applied neither casts nor splints. There were no intra or post operative implant insufficiency, avascular necrosis, heterotopic ossification, deep infection or any casting complications like decubitus ulcers. In conclusion we think that the locking pediatric femur plates reduce the implant related complications at the osteotomies of patients with cerebral palsy.

Date: 2012-11-28

Session: Paediatrics: Cerebral Palsy & Upper Extremity

Time: 10:30 - 12:00

Room: Maktoum C

Abstract no.: 31284

EFFECT OF LATISSIMUS DORSI AND TERES MAJOR TRANSFERS IN NEGLECTED CHILDREN WITH BRACHIAL PLEXUS PALSY

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Purpose: to evaluate the results of latissimus dorsi and teres major transfer surgeries performed for improving the shoulder abduction and external rotation functions in neglected children with brachial plexus palsy. Methods: 24 patients with shoulder active abduction and external rotation loss due to the obstetric brachial plexus palsy were included the study. Latissimus dorsi and teres major tendons were transferred to the tuberculum majus. Additionally pectoralis major and subscapularis lengthening were performed in 7 patients. 15 patients were female and 9 were male . Mean age was 13 years (6-17 years). All shoulder joints detected as congruent and no subluxation and dislocation was observed. Patients were evaluated for shoulder abduction, external rotation and Mallet score. Mean follow-up time was 39 months (24-49 months). Results: Shoulder external rotation improved from 18 degrees to 74 degrees, active shoulder abduction from 69 degrees to 135 degrees. Modified Mallet score for shoulder abduction, improved from 2.85 to 3.88, for shoulder external rotation from 2.35 to 3.63 for hand-to-mouth function, from 2.40 to 3.54, for hand-to-neck function improved from 2.17 to 3.15. Modified Mallet score for hand-to-dorsum function decreased from 2.55 to 2.50. All Mallet scores changes except the hand-to-dorsum function found statistically significant. Conclusions: Latissimus dorsi and teres major tendon transfers and pectoralis major and subscapularis lengthening procedures performed for improving shoulder abduction and external rotation functions in neglected children with brachial plexus palsy seems to be as effective as surgical procedures performed for the same group of patients at earlier ages.

Date: 2012-11-28

Session: Paediatrics: Cerebral Palsy & Upper Extremity

Time: 10:30 - 12:00

Room: Maktoum C

Abstract no.: 32764

RESTORATION OF FINGERS IN CHILDREN BY TOE TO HAND TRANSFER

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The preserving of function of the fingers is one of the most important conditions of the normal development of the child. Congenital & acquired deformities of fingers significantly reduce the possibility of normal child development. One of the most effective methods of the finger's reconstruction is microsurgical toe to hand transfer. But according to the literature this operative procedure is very rarely used in children with congenital hand pathologies. During 22-years period, 798 toe to hand transfers for 651 children with different types of the congenital & acquired hand and foot deformations were done in the department of reconstructive microsurgery and hand surgery Turner Scientific and Research Institute for Children's Orthopedics in Saint-Petersburg, Russia. 72% were children with various congenital pathologies & 28% - with the effects of mechanical, fire, burn injury, the effects of acute hematogenous osteomyelitis and after tumor removal. As the autografts we used the second (third, fourth, fifth) toe; great toe with its congenital duplication, additional finger from contralateral hand; two toes consisting of one graft. In 378 cases part of the metatarsal bone was included into the graft for the reconstruction of the first metacarpal bone. 38 children had good and excellent functional and cosmetic results (74,5%). The earliest reconstruction of the fingers will provide the fastest restoration of its function. The formation of the feeling of the fingers in a child is completed to 12 months age, so we consider that it is necessary to do reconstruction before this age.

Date: 2012-11-28

Session: Paediatrics: Cerebral Palsy & Upper Extremity

Time: 10:30 - 12:00

Room: Maktoum C

Abstract no.: 30791

SURGICAL REHABILITATION OF THE UPPER EXTREMITY IN CHILDREN WITH ARTHROGRYPOSIS

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From 2004 to 2011 we examined and treated 181 patients with upper limb deformities. The age of children was from 5 months till 18 years. The most important problems are the age of patient for beginning of operative treatment and the sequence of elimination of all deformities. The optimum age for the beginning operative treatment is the age of 5-6 months. When the patient has passive flexion in the elbow 90 degrees and more at first we eliminate the wrist deformities. In these cases we performed transposition of m.flexor carpi ulnaris and m.flexor carpi radialis on extensor surface of a hand and forearm in an isolated variant or in a combination with resection of bones of a wrist. When the patient has passive flexion in the elbow less 90 degrees at first we carry out restoration of passive movements by posterior capsulotomy of the elbow with the triceps tendon lengthening or restoration passive and active movements in a joint by posterior capsulotomy of the elbow with the triceps tendon lengthening and transposition of some muscles groups (latissimus dorsi, pectoralis major, triceps brachii). When the patient has flexion contracture in the elbow we prefer to perform extension osteotomy of the humerus. When the patient has rotation deformities of upper limb or forearm we perform osteotomy of humerus (or radial bone). The proposed methods of treatment patients with arthrogyposis allow to eliminate deformities and restore their daily activities.

Date: 2012-11-28

Session: Miscellaneous: Osteotomies & Reconstructive Surgery

Time: 17:00 - 18:30

Room: Maktoum C

Abstract no.: 33430

**CONGENITAL CRURAL SEGMENTAL DYSPLASIA – THERAPY
ALGORITHM ACCORDING TO WEBER-CLASSIFICATION**

Michael WEBER

(UNITED ARAB EMIRATES)

Introduction: The so-called "congenital pseudarthrosis of the tibia" is currently a challenging disease in pediatric orthopedics. In the Literature the healing rates ranges from 15% to 70% according to the used different surgical techniques. Not rare the treatment ends in amputation of the affected limb after several unsuccessful operations. According to the Weber-classification and Weber-score the therapeutical algorithm is presented. Materials and Methods: According to the six different types of CCSD the individual special therapeutical approach of our clientele of more than 40 cases is presented with consideration of the Weber-score. The therapeutical regime is derived from own pathoanatomical studies in combination with special radiographic measure techniques and MRI to detect the amount of resection of pseudarthrosis, sclerotic bone and affected periosteum. Results: In our clientele a healing rate of more than 90% could be achieved. Conclusions: The CCSD is a disease with different grades of development. A key role for a successful therapy of the severe forms plays the radical resection of the pseudarthrosis, the affected periosteum and sclerotic bone followed by a stable fixation with ring fixator and bone producing techniques like callus distraction and bone plasty.

Date: 2012-11-28

Session: Miscellaneous: Osteotomies & Reconstructive Surgery

Time: 17:00 - 18:30

Room: Maktoum C

Abstract no.: 32109

RISK FACTORS OF DIAPHYSEAL LONG BONE NON-UNION

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About 10% of all fractures do not heal, and the factors associated with non-union have not been clearly established. The detrimental effects of initial opening, diabetes and tobacco are frequently cited but poorly documented. **Material and Methods:** In this retrospective study, 38 adult (age >16 y.o.) diaphyseal long bones non-unions (10 femurs, 16 tibias and 12 humerus) treated in our department between 2000 and 2010 were matched (age, gender, location) to 76 similar fractures with primary bone healing within normal delay. The following risk factors were investigated: tobacco addiction, diabetes mellitus, polytrauma, open fracture, absence of central nerve system injury, and type of bone fixation. The χ^2 test was used to compare the two groups and the odd ratios were calculated when a significant difference was observed. **Results:** In total 114 patients were included in the study (38 non-unions and 76 primary bone healing cases). The average age of the two groups was similar (46 for non-unions, 47 for primary healed cases). There were 21 (55,3%) smokers in the non-union group vs 19 (25%) in the control group ($p < 0,05$ - odds ratio 3,71 IC95% - 1,63; 8,45). There were 16 (42,1%) open fractures in the non-union group vs 17 (22,4%) in the control group ($p < 0,05$ - odds ratio 2,52 IC95% - 1,09; 5,84). There was no significant difference between the two groups for the other risk factors. **Conclusion:** This study confirms the harmful effect of tobacco on bone healing, even when the fracture is closed.

Date: 2012-11-28

Session: Miscellaneous: Osteotomies & Reconstructive Surgery

Time: 17:00 - 18:30

Room: Maktoum C

Abstract no.: 33431

WEBER CABLE TECHNIQUE FOR SALVAGE PROCEDURE OF OSTEOMYELITIS

Michael WEBER

(UNITED ARAB EMIRATES)

Introduction: Different salvage procedures for treatment of osteomyelitic bone segments are known in the literature. The complete excision of the infected bone segment ensures the best long term outcome for treatment of infected bone. The resulting bone defect can be solved ideally by segmental bone transport with callus distraction. The advantages using the Weber-Cable-Technique according to other bone transport techniques are demonstrated. Materials and Methods: Our clientele with complex treatment procedures after segmental bone resection and their successfully management with flexible cable wires and pulleys mounted on an Ilizarov frame, Taylor Spatial Frame or Mini-Ringfixator are demonstrated. Results: The patient's case histories will be used to demonstrate this versatile technique. The modifications permit the fixation of the required distractors directly on the frame to avoid protruding and cumbersome constructs. Thus, a restriction of the range of motion is avoided, while early weight bearing can be permitted. Conclusions: The advantages of this method utilizing flexible cables and pulleys as part of the transport mechanism are outlined as follows. It will be possible to avoid the usual problems associated with K-wires and the standard procedure for segmental bone transport. The application of this technique should not present a problem for surgeons familiar with the Ilizarov ring fixator system. The reduction of treatment times in the fixator, as well as the increased patient acceptance and comfort, are some of the definite advantages of this technique.

Date: 2012-11-28

Session: Miscellaneous: Osteotomies & Reconstructive Surgery

Time: 17:00 - 18:30

Room: Maktoum C

Abstract no.: 32936

SALVAGE RECONSTRUCTION OF MASSIVE BONE LOSS USING ILIZAROV PRINCIPLES

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Introduction and aim of the work: The problem of skeletal reconstruction of massive bone loss is increased in case of massive bone loss. In the current study we evaluate the use of fibula in association of Ilizarov external fixator in management of massive post traumatic bone loss of tibial shaft. Materials and methods: Between December 1999 and 2004, we treated 8 adult patients with bone loss 10 cm and more. The indication was massive bone loss, extensive soft tissue scar, vascular compromise, and short tibial remnants. Whole fibula was used in 6 conditions and partial fibula in 2. The average age was 30.5 years (range: 25:51). The fibulas were prepared for transfer either as a whole or partially transfer. Ilizarov device was applied with a special construct for each condition accordingly. Free latissimus dorsi was applied in 1 patient, and fasciocutaneous flaps in 2. Four patients with whole fibula transfer continued to wear orthosis for outdoor activities. Results: The mean follow-up period was 40 months (range: 24:96) after healing. All fractures healed between 8 and 24 months. Conclusion: We concluded that the Ilizarov external fixator is effective in management of management of massive post traumatic bone loss of tibial shaft. It provides advantages of compensation of bone defects, length, and early rehabilitation. It has the disadvantages of long healing time, long orthotic support. Its advantages are clear in case of massive bone loss, extensive soft tissue scar, vascular compromise, and short tibial remnants.

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Tibial Pilon Fractures

Time: 08:30 - 10:00

Room: Maktoum D

Abstract no.: 33083

THE CURRENT-DAY MANAGEMENT OF COMPLEX DISTAL TIBIAL FRACTURES

Adrian BARBILIAN, Marius MOGA, Stefan MITULESCU, Mark-Edward POGARASTEANU

Central University Emergency Military Hospital "Carol Davila" Bucharest (S.U.U.M.C.) - Orthopaedics and Traumatology Clinic, Bucharest (ROMANIA)

Complex distal tibial fractures pose difficulty regarding the precise diagnosis of each fracture type. This should be accomplished primarily by performing a CT with 3D reconstruction, aiding in the pre-operative planning: precise measurements of the bone fragments and their alignment, bone defects, positioning of each plate. The complex fracture types (AO type C and Rüedi type III), with articular and diaphyseal involvement, pose serious problems with epiphyseal reconstruction. When choosing a surgical approach, one must keep in mind the danger of soft tissue devitalisation; this advises a minimal incision, with an open anatomical reconstruction of the articular surfaces. In reconstructing the articular surface, one must attempt to use all osteocartilaginous fragments. The osteosynthesis system's rigidity and the joint stabilisation are both important for an early mobilisation, avoiding muscle wasting, cartilage degeneration and ankylosis. A firm screw and plate osteosynthesis of the peroneum fractures with reduction and fixation of the tibio-peroneal syndesmosis gap are both relevant to the stability of the fracture and aid in early mobilisation. Over the past 5 years, 62 patients with complex distal tibial fractures were treated surgically in our Clinic. Of these, 57 patients recovered with no complications, and 5 suffered minor infection, that responded well to treatment. All patients returned after 90 days to partial weight bearing, and eventually to full weight bearing on the affected limb, and they all recovered ankle mobility. It is our conclusion that a careful case evaluation and a precise diagnosis are key to a successful treatment of these fractures.

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Tibial Pilon Fractures

Time: 08:30 - 10:00

Room: Maktoum D

Abstract no.: 32580

MANAGEMENT OF DISTAL TIBIAL FRACTURES BY JESS

Shah Waliullah SHAH WALI, Vineet Sharma VINEET, Ashish Kumar ASHISH, Santosh Kumar SANTOSH, K. SHANTANU

C.S.M. Medical University (Earlier KGMC), Lucknow (INDIA)

Introduction: Fractures of distal tibia are notorious for their complications. These fractures are frequently intraarticular, fractures of distal end tibia are challenging to surgeons because of their increased number, variety and complexity. Methods: This study was conducted on patients of fracture of the distal end of tibia admitted in our emergency department of Orthopaedic Surgery from August 2007 to June 2009, 36 patients were selected. Patients were classified as per AO classification were, nine patients with Type A, fifteen with type B, twelve with type C fracture. All patients were managed by close reduction or limited open reduction and external fixation by JESS. Patients were followed up at 4 to 6 weeks after operation and thereafter at 8 to 10 weeks and 6 months after surgery in the outpatient department. After union they were followed 6 monthly for long term complications. Functional outcome was measured as per Tenny & Wiss Criteria. Results: In our study we concluded that close reduction and percutaneous fixation with JESS in perspective of increasing severity of trauma, have a distinct advantage over other modalities of surgical intervention in terms of soft tissue protection, lesser Operative time and other Complications. Conclusion: JESS can be used as viable alternative and cost effective method for treatment of plafond fractures. Key Words: Distal tibia fractures, External fixation JESS

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Tibial Pilon Fractures

Time: 08:30 - 10:00

Room: Maktoum D

Abstract no.: 31219

LOCKING PLATE OSTEOSYNTHESIS FOR TREATMENT OF DISTAL TIBIA FRACTURES

Ashish Kumar GOHIYA, Rahul VERMA, Suneet TANDON, Anoop MEHROTRA, Sanjiv GAUR

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Distal tibial fracture management presents certain problems related to poor vascularity leading to decreased healing rate, soft tissue concerns, articular restoration and mechanically stable fixation allowing early mobilization. This study was carried out at Department of Orthopaedics & Traumatology Gandhi Medical College, Bhopal, MP, India to investigate the technique and clinical results of mini open locking compression plate osteosynthesis for the treatment of the distal fractures of tibia. 26 patients with the distal tibia fractures were treated with mini open technique through two incision and medial LCP. There were 18 males and 8 females with an average age of 41 years old ranging from 17 to 72 years. According to AO fracture classification for the distal tibial fractures, there were 11 cases of type A, 6 of type B, 9 type C. All the patients were followed up from 12 to 24 months (averaged 16 months). All of the fractures showed bone union. The time required for the bony union ranged from 3 to 11 months (averaged 4 months). The patients were evaluated on functional recovery according to Mazur Grating System for the Ankle. The results were excellent in 21 cases, good in 4, and poor in 1. Choosing mini open approach and medial locking plate for the treatment of the distal tibial fractures can obtain satisfactory function, high rate of bone union and fewer complications.

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Tibial Pilon Fractures

Time: 08:30 - 10:00

Room: Maktoum D

Abstract no.: 32247

DIFFERENT MANagements OF DISTAL TIBIAL FRACTURES

Wajahat Jamal ASHRAF

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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) Joshi's 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.

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Talus & Ankle Fractures

Time: 14:30 - 16:00

Room: Maktoum D

Abstract no.: 32111

OPERATIVE TREATMENT OF TALAR NECK FRACTURE

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(AUSTRIA)

Introduction: Fractures of the neck and body of the talus present difficult treatment challenges. These fractures are often associated with other skeletal injuries, which complicate the treatment. The vulnerable blood supply and abundant articular surfaces may lead to long term problems. Post-traumatic avascular necrosis of the talus body is a common complication. Material and method: The clinical course of 61 patients with a severe talar neck fracture is presented in this retrospective study. According to the Hawkins classification there were 26 (43%) of Type II, 17 (28%) of Type III and 18 (29%) of Type IV talar neck fractures. The operative treatment performed in 34 patients (56%) by open reduction and internal fixation, in 13 patients (21%) by external fixation, in 5 patients (7%) with percutaneous screw fixation and in 9 patients (16%) by closed reduction and percutaneous K-wire fixation. Results: The mean of the AOFAS score was 80 points in type II, 74 points in type III and 68 points in type IV fractures. Mild osteoarthritis of the talocrural joint was seen in 14 patients (22%) and severe osteoarthritis in 10 patients (16%). Conclusion: Closed or open reduction and internal fixation is required in all displaced fractures of the talus. The postoperative management should consist of early functional treatment and ambulation without weight bearing until the radiographic appearance of trabecular bone in the fracture zone and evidence of revascularization and vitality in the talus body shown by MRI or intraosseous phlebography.

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Talus & Ankle Fractures

Time: 14:30 - 16:00

Room: Maktoum D

Abstract no.: 32052

LATE FUNCTIONAL RESULTS OF MALLEOLAR FRACTURES

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We present an observational late function result study of surgically treated malleolar fractures Weber classification type A (7.6%), B (53.2%) and C (39.2%) from Jan. 1993 to Dec. 2000 in the University hospital "Rebro". 147 patients with earlier mentioned fractures were surgically treated. Control check was done after more than a year of definitive treatment, of which 79 patients (53.7%) replied to our control check. Most important surgery aims are anatomical reconstruction of the ankle joint, regain of the fibula length and rotation correction in the ankle, which constructs the biomechanical ankle unit. We decided that the most objective evaluation function quality method is to compare individually ankles function. Key factors are prompt surgery, minimal invasive surgery and early rehabilitation. In 31 cases (39,2 %) pain was present due to weather change, in 7 cases (8.9%) an instability sensation was marked, whereas sufferings such as stiffness, cold and parasthaesia were considered not to be exclusively related to the injury. No cases of local infection were found, in only 2 cases (2.5%) the wound healed "per secundam". In conclusion we confirm literature results that the surgery end result is still not satisfactory even after hardware extraction.

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Talus & Ankle Fractures

Time: 14:30 - 16:00

Room: Maktoum D

Abstract no.: 30853

EVALUATION OF TORSIONAL, COMPRESSIVE AND SHEAR FORCES IN DIFFERENT FIXATION MODES OF WEBER B ANKLE FRACTURE

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A supination external rotation injury of ankle (Weber B) produces an oblique fracture pattern at distal fibula. Surgical fixation involves anatomical reduction of fracture fragments and application of interfragmentary screw to overcome shear forces and then application of thin third tubular plate on the lateral or posterior aspect to counter remaining shear forces and neutralize axial loading and torsional forces. Invariably patients are made to non-weight bear as it is perceived axial load forces are much higher than stiffness of fracture fixation, thus weight bearing may produce failure. We conducted an experiment to find out if at all it will be possible to commence full weight bearing straightaway. We compared five surgical stabilisation techniques for oblique SE II fracture patterns, namely lag screw and neutralisation lateral plate; lag screw and posterior plate; a bridging plate; a locking plate and just two inter- fragmentary screws. Saw bones were used as standard comparative adult healthy bone. Fractures were created and after fixation of saw-bones with above mentioned five techniques, they were placed in the testing jig and loaded with compressive and torsional forces. A point when fragments started to move apart more than 2 mm and a point at failure was noted. Experiment was repeated three times for each configuration, thus in total 30 experiments were performed and results were evaluated. Two questions were answered; firstly which construct was most stable against compressive and torsional load and secondly which configuration allowed early weight bearing; we shall discuss our results.

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Talus & Ankle Fractures

Time: 14:30 - 16:00

Room: Maktoum D

Abstract no.: 30879

AN ANATOMICAL STUDY OF THE STRUCTURES AT RISK AS APPLIED TO THE POSTEROLATERAL APPROACH TO THE DISTAL TIBIA

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Posterior malleolar fractures are present in up to 44% of all ankle fractures. Those involving >25% of the articular surface have a higher rate of posterior ankle instability which may predispose to post traumatic arthritis. The posterolateral approach to the distal tibia allows direct reduction and stabilization of the posterior malleolus and concomitant lateral malleolus fractures. An anatomical study was performed to establish the safe zone of proximal dissection to avoid injury to the peroneal vessels in this uncommon approach. METHODS: 26 unpaired adult lower limbs were dissected using the posterolateral approach to the distal tibia as described by Tornetta et al. The peroneal artery was identified coursing through the intraosseous membrane on deep dissection as the flexor hallucis longus muscle was reflected medially. The level of its bifurcation was also noted over the tibia. Perpendicular measurements were made from the tibial plafond to these variable anatomical locations. RESULTS: The peroneal artery bifurcated at 83+/-21mm (41–115mm) proximal to the tibial plafond and perforated through the interosseous membrane 64+/-18mm (47–96mm) proximal to the tibial plafond. CONCLUSION: The safe zone for the posterolateral approach to the distal tibia is described. Caution is advised as the bifurcation and perforating artery may be as little as 41mm from the tibial plafond. This is important during deep dissection when the belly of the flexor hallucis longus muscle is reflected medially from the medial edge of the fibula. Once the peroneal artery was mobilized a buttress plate could easily be placed beneath it.

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Calcaneal Fractures

Time: 17:00 - 18:30

Room: Maktoum D

Abstract no.: 31369

LONG-TERM RESULTS OF NON-SURGICAL TREATED CALCANEAL FRACTURES

Huub JI VAN DER HEIDE, Kees BARTLEMA, Rutger TORDOIR
Leiden University Medical Centre, Leiden (NETHERLANDS)

Introduction: This study focuses on the results of non-surgical treated calcaneal fractures. Although the results of various surgical treatments are published, little is known about the long-term results of non-surgical treatment. Aim: To analyze the radiological and functional outcome of patients with calcaneal fractures with long term follow-up which were treated non-surgically, and to analyze which variables might predict the clinical outcome of these patients, using clinical and radiological outcomes. Patients and methods: We addressed 35 patients with 37 intra-articular fractures of the os-calcis, which were treated non-surgically. All radiographs of the fractures and the radiographs at the latest follow-up were analyzed. All patients were invited for a clinical examination and radiographs. A FFI score, SF-36 score and AOFAS score were recorded as clinical outcome. A regression analysis was performed with the clinical outcome measures and age, gender, Böhler's angle, Gisane's angle, and trauma mechanism as predicting variables. Results: With a median follow-up of 12.8 years the mean AOFAS score was 75.8 points, the mean SF-36 score was 64.4 points and the median FFI score was 13.3 points. In the regression analysis we found that none of the variables could predict the clinical outcome both univariate and multivariate. Even the Böhler's and Gisane's angle did not predict the clinical outcome. Although there was a strong correlation between Böhler's angle on the lateral radiograph and the occurrence of degenerative changes in the long-term follow-up, both Böhler's angle and the degenerative changes did not predict the clinical outcome measures.

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Calcaneal Fractures

Time: 17:00 - 18:30

Room: Maktoum D

Abstract no.: 31503

FRACTURES OF CALCANEUM: ROLE OF MODIFIED ESSEX-LOPRESTI REDUCTION AND PERCUTANEOUS CANNULATED CANCELLOUS SCREW FIXATION

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¹Dr D Y Patil Medical College, Pune (INDIA), ²Pegasus Hospitals, Ludhiana (INDIA)

Fractures of calcaneum account for 1-2% of all musculoskeletal injuries, 65-70% of which are intra-articular. The debate over conservative versus operative methods of these notorious fractures has raged for many decades, and the Essex-Lopresti technique of percutaneous manipulation has been an attractive middle-path. We modified the Essex-Lopresti technique, added percutaneous cancellous screw fixation, shorter period in cast and earlier weight-bearing, and report our success on 23 cases. The cases were followed up for a mean of 3.3 years, with minimum follow up of 2.5 years. Pre-operative and post-operative comparisons were carried out in all cases using radiographs, and CT scans where appropriate. This technique resulted in satisfactory reproduction of Angles of Bohler and Gissane, with good functional outcomes. The technique resulted in preservation of fracture hematoma, no significant blood loss, and earlier and faster rehabilitation. The technical difficulties and shortcomings of this procedure are also addressed including one case, which went on to have subtalar arthrodesis. The technique is promising and outlines the important points to be considered when undertaking treatment of these complex fractures.

Date: 2012-11-28

Session: SICOT Trauma Committee Symposium - Trauma: Calcaneal Fractures

Time: 17:00 - 18:30

Room: Maktoum D

Abstract no.: 32077

A NEW MINIMALLY INVASIVE TECHNIQUE FOR TREATMENT OF INTRA-ARTICULAR FRACTURES OF THE CALCANEUS. PRELIMINARY RESULTS

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Introduction: development of major wound complications is a serious concern in treating calcaneal fractures. After ORIF of displaced calcaneal fractures, wound edge necrosis is seen in 0.4—14% with the extended lateral approach and infection rates vary between 1.3% and 7%. The aim of this study was to evaluate results of our minimally invasive surgical treatment of intra-articular fractures of the calcaneus. Methods: 21 patients with 26 closed, intraarticular fractures of the calcaneus were treated with a minimally-invasive technique. Patients evaluated with standard lateral, axial radiographs and CT of the calcaneus. There were 7 (27%) Sanders' type II, 11 (42.3%) type III and 8 (30.7%) type IV fractures. The principle introduced by Forgon in 1992 was closed reduction and fixation of the articular surface with a cannulated short threaded screw, then maintaining the height and the width of calcaneus using 2 positional screws. We modified that technique by using a small lateral incision to reduce and fix the articular surface. Results: Bohler's angle was measured preoperatively with an average of 14 and the average angle at the follow up evaluation was 29. A congruent reduction of the posterior facet was achieved in 24 (92.3%) fractures. All patients returned to their previous occupation within 6 months of surgery. No patient had deep or wound infection. Conclusion: Our minimally invasive technique for the treatment of intra-articular calcaneus fractures produced results comparable to other minimal invasive techniques avoiding the serious soft tissue complications encountered with ORIF.

Date: 2012-11-28

Session: Sports Traumatology: Hip, Ankle & Wrist Arthroscopy

Time: 10:30 - 12:00

Room: Rashid A

Abstract no.: 30951

HIP ARTHROSCOPY IN MANAGEMENT OF FAI

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Hip Arthroscopy in management of FAI Femoroacetabular impingement (FAI) is an increasingly diagnosed hip problem in adults. Hip Arthroscopy is evolving as the gold standard. We describe our management of 40 patients of FAI with hip arthroscopy. We use the Dienst technique of peripheral compartment access first, followed by central compartment access under vision. CAM lesions are removed first followed by lesions in the central compartment of labral debridement, repair and treatment of carpet delamination. The age ranged from 15-45 y, we had 30 males & 10 females. Patients were assessed with the Oswestry disability index (ODI) and the WOMAC score. The scores improved from preoperative ODI (16-56%) and WOMAC mean 35 to postoperative ODI (9-72%) & WOMAC 75. Complications included, 2 failed distractions, 3 LCNT palsy, 1 transient femoral nerve palsy & 1 heterotopic ossification. Overall, most patients were satisfied with the treatment with improvement of the mean VAS from 7 to 2. Conclusions: Hip Arthroscopy is an evolving gold standard for treatment of FAI, with a high learning curve.

Date: 2012-11-28

Session: Sports Traumatology: Hip, Ankle & Wrist Arthroscopy

Time: 10:30 - 12:00

Room: Rashid A

Abstract no.: 32577

NEW CIRCLE SIGN AS A SCREENING TEST FOR CAM-TYPE FEMOROACETABULAR IMPINGEMENT SYNDROME

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Hypothesis: Is Circle sign a radiological test to screen for FAI CAM? Introduction: Cam-type femoroacetabular impingement is secondary to lack of concavity at the head-neck junction of the femur. Alpha angle described by Notzli quantifies the deformity of femoral head neck junction with a Cam deformity in Lauenstein view. Pistol grip deformity was described by Stulberg in Anteroposterior view. We have proposed a new X-ray sign – Circle sign. Methods: In 150 patients (46 females, 104 males) with mean age of 38 years (range, 26-61 years) coming with knee pain, a long leg standing X-ray AP view was taken. These were then evaluated for presence of pistol grip & circle sign. Positive circle sign is when a part of femoral head/neck comes out of a full circle drawn at the articular surface with its centre at the centre of femoral head. Results: Out of 150 patients scanned 39 patients had positive circle sign (26%), 11 patients had positive pistol grip deformity and a positive circle sign (7.3%). Out of these 39 patients, 38 patients had significant increased alpha angle (average 69.7); Conclusion: Positive circle sign suggests looking for pathology in the hip. Circle sign is a good screening test that seems to be more sensitive for Cam-type femoroacetabular impingement than the pistol grip deformity in general population. In our study all but one patient with a positive circle sign had an increased alpha angle.

Date: 2012-11-28

Session: Sports Traumatology: Hip, Ankle & Wrist Arthroscopy

Time: 10:30 - 12:00

Room: Rashid A

Abstract no.: 32181

INTRA-ARTICULAR CORTICOSTEROIDS FOR PAIN MANAGEMENT AFTER HIP ARTHROSCOPY

Christian FORONDA, Claudio ARRIAGADA, Cristobal MEIROVICH, Oscar AZOCAR

Clinica Indisa, Santiago (CHILE)

INTRODUCTION: Intra-articular corticosteroid injection (IACI) is a very popular procedure in orthopaedics. The main beneficial effect is pain relief. Its use after hip arthroscopy is an option as a coadjuvant in pain management. **Methods:** All of our patients underwent general anaesthesia without using corticosteroids in this process. We randomized two groups. After performing the surgical procedure we injected one of the groups with 40 mg of Depomedrol®. Both groups received the same general pain management protocol, with 300 mg of ketoprofen and 4 gr of dipyron in a 24 hrs infusion. We use an intravenous morphine infusion to determine the number of IV bolous required by the patient. VAS was obtained every 4 hrs to every patient during 24 hrs. Harris hip scored (HHS) was performed preop, at 1 week after surgery and 1 month after surgery. **Results:** A total of 40 patients were included, conforming two groups of 20 patients each. Mean age was 40.07 years. 34 patients suffered mixed impingement, 5-cam impingement and 1 pincer impingement. There were no statistical differences between both groups in terms of VAS and HHS. There was no extra requirement of morphine infusion ($p= 0.8$). **Discussion:** The data obtained in this study doesn't support the use of intra-articular corticosteroids as a coadjuvant in hip arthroscopy. It may be effective as a pain killer in degenerative pathology, but it doesn't seem to improve pain management after hip arthroscopy. A larger group of patients is needed to analyse separately the three impingements types.

Date: 2012-11-28

Session: Sports Traumatology: Hip, Ankle & Wrist Arthroscopy

Time: 10:30 - 12:00

Room: Rashid A

Abstract no.: 33090

THE ROLE OF FLUOROSCOPICALLY GUIDED INTRA-ARTICULAR HIP INJECTIONS IN POTENTIAL HIP ARTHROSCOPY CANDIDATES: EXPERIENCE AT A UK TERTIARY REFERRAL CENTRE OVER 34 MONTHS

**Johnny MATHEWS, David LOVEDAY, Vikas KHANDUJA
Addenbrooke's Hospital, Cambridge (UNITED KINGDOM)**

Introduction: Younger patients presenting with hip pain present the clinician with a diagnostic enigma. There may be concurrent intracapsular, extracapsular and spinal pathologies involved. Magnetic Resonance Imaging(MRI) can give a significant number of false negatives. Diagnostic hip injections have been suggested to be a useful tool in the work up of these patients. We aimed to evaluate the role of intra-articular local anaesthetic injections in appropriately identifying potential hip arthroscopy candidates. Methods: Retrospective review of medical and operation notes for all patients who underwent diagnostic hip injection at Addenbrooke's Hospital, Cambridge, between February 2008 and December 2010. Results: Of 67 patients who underwent an intra-articular hip injection, 55 experienced symptom improvement. Of these, 50 consented for arthroscopy, with intra-articular pathology found in all. Of the 12 whose symptoms failed to respond following injection, 7 went on to have arthroscopy due to aspects of history and examination; all 7 also displayed intra-articular pathology. The most common finding was a labral tear (94.7%) followed by impingement lesion (73.7%), chondral damage (47.3%) and ligamentum teres disruption (7.0%). Conclusion: In our highly filtered patient population, positive response to intra-articular hip injection efficiently identified patients that would benefit from hip arthroscopy. However, there is a subset of patients who do not respond to injection, but may still have intra-articular origins of their hip pain. This may relate to experience of the surgeon administering the injection. A negative response to hip injections should be interpreted with caution in patients in whom history and examination strongly suggest intra-articular hip pathology.

Date: 2012-11-28

Session: Sports Traumatology: Hip, Ankle & Wrist Arthroscopy

Time: 10:30 - 12:00

Room: Rashid A

Abstract no.: 32184

FLUOROSCOPY IN HIP SCOPE, REDUCING ITS UNNECESSARY USE

Cristobal MEIROVICH, Christian FORONDA, Claudio ARRIAGADA, Oscar AZOCAR

Clinica Indisa, Santiago (CHILE)

Introduction: Hip scope has become an orthopaedic usual procedure. The surgical technique includes intraoperative image intensifier for portal placement and if needed, verification of adequate bone resection. Objective: The aim of this study is to evaluate the exposure time and amount of radiation received during a hip scope procedure, as well the changing pattern related to our learning curve. Methods: We collected all data obtained from the Phillips BV Libra image intensifier used in every hip scope between January 2009 and June 2010 and then we tabulated exposure time (seconds) and amount of radiation generated by the fluoroscope (mGy). Results: We analysed 215 surgical procedures, all done by the same surgeon. Each hip scope procedure presented an exposure time average of 11.9 seconds (5 – 25 sec.) and a radiation average of 1.13 mGy (0.339 – 2.8 mGy), with a significant decrease during last year. Discussion: The use of intraoperative image intensifier during orthopaedic surgical procedures is not risk-free for both surgeons and patients, moreover when taking into consideration the preoperative studies radiation. Achieving this reduction of radiation goes directly associated with the surgeon experience. Decreasing the use of intraoperative fluoroscopy and the routinary use of protective measures among the surgical team such as lead aprons is recommended to diminish long-term related complications.

Date: 2012-11-28

Session: Sports Traumatology: Hip, Ankle & Wrist Arthroscopy

Time: 10:30 - 12:00

Room: Rashid A

Abstract no.: 32187

COMPARATIVE STUDY OF CONTEMPORARY VS DELAYED BILATERAL HIP ARTHROSCOPY

Christian FORONDA, Claudio ARRIAGADA, Cristobal MEIROVICH, Oscar AZOCAR

Clinica Indisa, Santiago (CHILE)

Introduction: The presence of bilateral femoroacetabular impingement syndrome (FAI) is common. Its surgical resolution can be done in different ways: contemporary hip arthroscopy (same day), simultaneous hip arthroscopy (one hip followed by the next immediately) and delayed hip arthroscopy (weeks or months). Methods: Prospective study of patients with FAI that needed surgical resolution. First group solved with delayed bilateral hip arthroscopy (4 to 10 weeks between procedures). Second group underwent contemporary bilateral hip arthroscopy. Both groups are subject to the same protocol for post-operative rehabilitation. Results: Contemporary arthroscopy (n = 46 hips) and delayed arthroscopy (n = 56 hips) are comparable from the epidemiological point of view. The most common complication was perineal hypoesthesia, which disappear in a few weeks without sequelae. There was no difference in the preop and postop Athletic Hip score. The need of home rest, work absenteeism, car driving and sport reinstatement was not significant among patients undergoing contemporary vs delayed arthroscopy. However, when performing delayed hip arthroscopy, this period of time was repeated, almost duplicating the total period of recovery in all items studied for both groups of patients. Discussion: We believe that bilateral hip arthroscopy during the same hospitalization, is both effective and a safe procedure for the patient's functional recovery. This approach does well solve the global pathology of the hip, with a short hospital stay and recovery time comparable to other behaviours. We consider this procedure as a valid therapeutic alternative for selected patients with bilateral FAI.

Date: 2012-11-28

Session: Sports Traumatology: Hip, Ankle & Wrist Arthroscopy

Time: 10:30 - 12:00

Room: Rashid A

Abstract no.: 32735

**LEARNING CURVE OF HIP ARTHROSCOPY WITH INVASIVE
DISTRACTOR: A SAFE AND REPRODUCIBLE METHOD**

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Arthroscopic access to the hip joint needs an optimal joint distraction that can be obtained by using a classical traction table with a risk of nerve injuries by elongation or by compression when the traction time exceeds 90 minutes. An alternative method is the use of an external invasive hip distractor. The purpose of this study was to evaluate, during the learning curve, complications and the ability to perform the planned surgery in hip arthroscopy with invasive distraction. Between 2008 and 2011, 40 hip arthroscopies with invasive hip distractor were performed by one experimented hip surgeon. We assessed the ability to perform arthroscopically the planned surgery, the surgical time and reported all technical incidents, minor and major intra-operative or postoperative complications. Access to the hip joint with sufficient distraction was obtained in all patients. The planned procedure was completely performed in all cases, without any conversion to an open procedure. No nerve injury has been reported and the average overall surgical time was reduced from 4 to 2 hours. We deplored four technical incidents, two iatrogenic chondral injuries of the femoral head and one postoperative in hip subluxation. Comparing to hip arthroscopy on traction table, the use of an invasive distractor in our study allowed us to access the hip joint in all cases without any nerve injury. With the advantages of no time limitation, this device is a safe alternative for hip distraction and we recommend it to learn hip arthroscopy and perform complex arthroscopic hip surgery.

Date: 2012-11-28

Session: Sports Traumatology: Hip, Ankle & Wrist Arthroscopy

Time: 10:30 - 12:00

Room: Rashid A

Abstract no.: 32961

GAIT ANALYSIS ASSESSMENT OF CHRONIC ANKLE INSTABILITY PATIENTS TREATED WITH ARTHROSCOPIC SYNOVECTOMY

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Ankle sprain is the most common injury in athletes and people participating in sports, representing 15-20% of all sports injuries. The development of repetitive ankle sprains and persistent symptoms after injury has been termed chronic ankle instability (CAI). The purpose of this study was to evaluate and compare the differences between uninjured and injured limbs of the patients, in means of kinetic-kinematic parameters of gait analysis, and objective criteria such as number of ankle sprains and AOFAS scores after arthroscopic synovectomy. Arthroscopic synovectomy was performed to 13 ankles of the 13 patients with standard portals. During operation, in all patients, anterolaterally localized hypertrophic synovitis and the scar tissue were observed and these tissues were arthroscopically shaved and debrided. According to our long term results, it is important to emphasize that the patients had reduced ankle sprains after arthroscopic debridement of hypertrophic synovitis. Postoperatively, gait analyses were performed to all of these 13 patients and temporospatial, kinetic and kinematic parameters were assessed. At the latest follow-up, AOFAS and VAS scores were compared and significant improvements were found. There found to be no significant difference according to gait analysis by using Wilcoxon test, and expected impairments were not found. To our knowledge, this was the first study of 3D gait analysis to evaluate the differences for CAI patients treated with arthroscopic synovectomy. Improvement of patient satisfaction, increased AOFAS scores, decreased ankle sprains, and improved gait pattern present that arthroscopic synovectomy is an effective procedure for CAI.

Date: 2012-11-28

Session: Sports Traumatology: Hip, Ankle & Wrist Arthroscopy

Time: 10:30 - 12:00

Room: Rashid A

Abstract no.: 32715

A JOURNEY TO WRIST JOINT ARTHROSCOPY: ACCURACY OF CLINICAL EXAMINATION AND MRI

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Introduction: The Wrist arthroscopy has become a gold standard for diagnosing TFCC pathologies and other intercarpal disorders. Our aim was to compare the clinical, MRI and wrist arthroscopic findings Methods: we reviewed 41 patients treated by the senior surgeon between March 2009 - Nov 2011. Inclusion criteria: TFCC, S-L, LTL injuries and articular cartilage damage, synovitis Exclusion criteria: septic arthritis, acute distal radius fractures Results: Clinical Findings MRI report Arthroscopic findings TFCC tear 30 28 26 S-L tear 13 9 13 Cartilage damage 12 18 19 Synovitis 15 22 26 Clinical Findings Arthroscopic findings Clinical examination Sensitivity specificity TFCC tear 30 26 93% 90% S-L tear 13 13 99% 99% Cartilage damage 12 19 70% 68% Synovitis 15 26 60% 55% MRI Arthroscopic findings MRI Sensitivity specificity TFCC tear 28 26 95% 92% S-L tear 9 13 75% 70% Cartilage damage 18 19 96% 94% Synovitis 22 26 88% 84% Clinical examination and MRI has good sensitivity and specificity for TFCC tears. MRI is good at synovitis and cartilage damage, but S-L is better judged clinically. Results showed clinical examination is crucial, MRI is used as an adjunct but the wrist arthroscopy remains the gold standard tool for diagnosis and therapeutic interventions. References: Mutimer, J., Green, J., Field, J. Comparison of MRI and wrist arthroscopy for assessment for wrist cartilage. Journal Of Hand Surgery; European Volume; June 2008 Ranjan Gupta, David J. Bozentka, A. Lee Osterman. Wrist Arthroscopy, The principles and applications. Journal of American Academy of Orthopaedic Surgeons. May 2001.

Date: 2012-11-28

Session: Sports Traumatology: Hip, Ankle & Wrist Arthroscopy

Time: 10:30 - 12:00

Room: Rashid A

Abstract no.: 31820

EARLY RETURN TO SPORTS WITH ATHLETES ABOUT POSTERIOR ANKLE IMPINGEMENT SYNDROME: UTILITY OF ARTHROSCOPIC SURGERY

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Introduction: Low invasive endoscopic surgery for posterior ankle impingement syndrome has recently been established and is expected to facilitate an early return to sports. So, we compared the outcomes of this with those of the current open method. Methods: The subjects were 25 ankles with 21 athletes who underwent endoscopic surgery for posterior ankle impingement syndrome, and their mean age was 19.9 years (14-32 years). Surgery was performed using the endoscope with a diameter of 2.7 mm, and posterior endoscopy with 2 portals in the lateral and medial regions of the Achilles tendon was employed. The open group was comprised of 6 ankles in 6 athletes who underwent surgery. The operation time, time required for return to sports, and the AOFAS scores before surgery and on the final follow-up were investigated. Results: The mean operation time was 84 minutes in the endoscopic group and 41 minutes in the open group, and the mean time required for a return to sports was 6.6 weeks in the endoscopic group and 11.8 weeks in the open group. The mean AOFAS scores were 80 and 78 before surgery, and 97 and 93 after surgery, respectively, showing no significant difference between the groups. Conclusion: Compared to the current open method, low invasive endoscopic surgery facilitated an early return to sports, and the outcomes were also comparable. This procedure is very useful for athletes and may become widely used in the future.

Date: 2012-11-28

Session: Sports Traumatology: Patella & Meniscus

Time: 14:30 - 16:00

Room: Rashid A

Abstract no.: 32449

THE IMMEDIATE EFFECT OF PATELLAR TAPING ON PATELLOFEMORAL PAIN SYNDROME WITH INTERNAL ROTATION OF DISTAL FEMUR

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Introduction: Patellar taping has been proved effective on most of patellofemoral pain syndrome. Among the ineffective cases, internal rotation of distal femurs may be an important factor to influence the effectiveness. We hypothesized that patellar taping would have less effect on the cases with internal rotation of distal femurs. Methods: A total of consecutive 40 patients with patellofemoral pain syndrome were enrolled. Sex, age, pain duration, congruence angles, and Q angles were recorded. Before treatment, an independent physical therapist evaluated if there was distal femur rotation. All patients were treated with patellar taping by the McConnell method. Patients scored their pain level with 100-mm visual analog scale during stepping down from an 8-inch platform, and two weeks after taping. Patients with a visual analog scale score decrease of 20 mm or more after taping were considered responsive, and the others were considered nonresponsive. The influences of the femoral rotation, congruence angle, and Q angle, on the effectiveness of taping were analyzed by multivariate logistic regression. Results: Among the 40 patients, 27 patients were responsive to patellar taping, and 13 patients were considered as non-responsive group. Twelve patients suffered from skin allergy. Internal rotation was a negative predictor to patellar taping. The levels of Q angle, congruence angle, and visual analog scale were smaller in the effective group. Conclusions: Patellar taping was less effective on patients with internal rotation of femurs. Other treatment options should be considered in these patients.

Date: 2012-11-28

Session: Sports Traumatology: Patella & Meniscus

Time: 14:30 - 16:00

Room: Rashid A

Abstract no.: 32161

MPFL RECONSTRUCTION USING AUTOLOGOUS SINGLE HAMSTRING (SEMITENDINOSUS) GRAFT – OUR EXPERIENCE

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Introduction: Recurrent lateral dislocation of the patella has been historically treated with a combination of multiple techniques including lateral release, proximal realignment, medial reefing, and distal realignment. The outcomes are inconsistent and many studies have reported recurrent dislocations and patellofemoral pain and arthritis in up to 40%. Recent biomechanical studies have identified the functional importance of the medial patellofemoral ligament as the primary restraint to lateral translation of the patella. We describe a simple technique of MPFL reconstruction using ipsilateral semitendinosus tendon autograft which is passed through the medial intermuscular septum at the adductor's magnus insertion and is fixed to the superomedial pole of the patella. Material and Methods: Retrospective study involving 11 patients including 6 males and 5 females. Patients were operated at the South London Healthcare Trust by a single surgeon (Mr. S.R.). Standardised physiotherapy protocol was employed. Follow-up was done in outpatient clinic at 3, 6 and 12 months. Subjective questionnaire, Oxford Knee Score and the Kujala Scores for assessments and analysed. Results and Conclusions: All patients were available for postoperative evaluations. Mean follow-up was achieved at 6 months. Mean age was 31 years. There was a significant improvement of the mean Kujala Score in all our patients. One patient persisted with patellar apprehension. There were no infections. MPFL reconstruction improves clinical symptoms, reduces the patellar tilt substantially, and may correct patella alta. Additional mild trochlear dysplasia did not compromise the outcome; however, this fact needs further attention in a larger study group.

Date: 2012-11-28

Session: Sports Traumatology: Patella & Meniscus

Time: 14:30 - 16:00

Room: Rashid A

Abstract no.: 32138

PATELLA TENDONITIS IN THE SETTING OF AN ENGLISH PREMIER LEAGUE FOOTBALL CLUB

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INTRODUCTION: Patella tendonitis is common amongst sportsmen. No published evidence of this injury in elite professional footballers exists. This study determines the frequency of this injury in the elite professional footballer, along with the amount of time missed and the outcomes of various treatment options. **METHODS:** Data was collected prospectively for injuries suffered by first team, development squad and academy squad players over the 2009-10 and 2010-11 English Premier League (EPL) season at one EPL club. Each player's demographics were recorded. The injury was recorded along with the time that the player was absent because of the injury, the treatment that the player received and whether they suffered any recurrence of the injury. **RESULTS:** 35 knee injuries were observed, 21% of all injuries. Ten were patella tendonopathies, 28.6% of knee injuries and 6% of all injuries suffered. Eight injuries were in first team and 2 in academy players. Mean absence was 67 days in first team and 120 days in academy players. Both the academy players underwent surgery as their primary treatment. Four first team players were treated with local injection (mean absence of 110 days) and four with physiotherapy (mean absence of 24 days). There was recurrence in 4 cases, all within the first team (50%), 2 in each of the physiotherapy and injection groups. **CONCLUSIONS:** Patella tendonitis is a common knee injury suffered by elite professional footballers, which results in a prolonged absence and carries a high risk of recurrence. The best treatment option remains debateable.

Date: 2012-11-28

Session: Sports Traumatology: Patella & Meniscus

Time: 14:30 - 16:00

Room: Rashid A

Abstract no.: 30912

COMBINED ARTHROSCOPIC LATERAL PATELLAR RETINACULAR RELEASE WITH PPLICATION OF MEDIAL PATELLO FEMORAL LIGAMENT FOR TREATMENT OF PATELLOFEMORAL INSTABILITY

Wael NASSAR

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Although recurrent patellar dislocations are not uncommon, their pathophysiology and treatment remain controversial. It has been suggested that in the majority of cases of patellar subluxation or dislocation, the medial patellofemoral ligament (MPFL) is attenuated or disrupted; accordingly several authors over the past decade have recommended repair or reconstruction of MPFL to reduce the incidence of recurrence. Patients and Methods: Twelve patients (16 knees) underwent an arthroscopic lateral release and mini-open medial reefing for the treatment of recurrent patellar subluxation or dislocations with an average follow-up of 16 months (range 8–24 months). Results: Subjective symptom scores improved significantly. Lysholm knee scores improved from an average of 54 to 91 ($P < .001$). Tegner activity level improved from an average of 3.3 to 6.2 ($P < .001$). Significant improvement was seen in patellar mobility, apprehension, and patellofemoral tenderness with compression. Radiographically, there was a statistically significant improvement in the congruence angle and in the lateral patellofemoral angle. Conclusion: Arthroscopically assisted medial reefing, with lateral release, is an effective treatment for patients with recurrent patellofemoral instability and normal alignment.

Date: 2012-11-28

Session: Sports Traumatology: Patella & Meniscus

Time: 14:30 - 16:00

Room: Rashid A

Abstract no.: 32892

LATERAL MENISCECTOMY: THE BEGINNING OF THE END OF THE KNEE

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INTRODUCTION: The purpose of this study was to assess the effect of medial and lateral meniscectomy on professional footballers' return to play. **METHODS:** We retrospectively reviewed 121 professional football players. Each patient had received either a medial or lateral meniscectomy. The mean age was 23.9 years. The outcome measures were time to return to play, decision to retire, and problems related to pain/swelling. A multivariate regression analysis was used to analyse the relationship between time to return to play and side of meniscectomy when controlling for age, chondral damage and primary/revision procedure. **RESULTS:** There were 69 lateral meniscectomies (44 primary/25 revision) and 52 medial meniscectomies (49 primary/3 revision). 3 players from the lateral meniscectomy group had to retire. The median time to return to play in the lateral group was 8 weeks (4-24) and in the medial group was 5 weeks (3-12). At all time points post-surgery, the cumulative probability of returning back to play was greater after a medial meniscectomy in comparison to a lateral meniscectomy. Lateral meniscectomy cases experienced significantly more problems related to pain/swelling than medial (74% vs 13%). A lateral meniscectomy and the presence of chondral damage were significant predictors in delaying the time to return to play. **DISCUSSION:** Lateral meniscectomy is associated with a longer time to return to play, more ongoing symptoms, a higher likelihood of revision surgery, and the possibility retirement. These findings form the basis of an important discussion that must be had with player and club before embarking on meniscal surgery.

Date: 2012-11-28

Session: Sports Traumatology: Patella & Meniscus

Time: 14:30 - 16:00

Room: Rashid A

Abstract no.: 32131

LEARNING AND RETAINING ARTHROSCOPIC MENISCAL REPAIR

Tanvir KHAN, William JACKSON, Abtin ALVAND, Sami AL-ALI, Harinderjit GILL, Andrew PRICE, Jonathan REES

University of Oxford, Oxford (UNITED KINGDOM)

Purpose: The aims of this study were to objectively demonstrate the learning curve for arthroscopic meniscal repair and to determine the impact of task repetition on the retention of this skill. **Methods:** 19 orthopaedic residents with no previous experience in arthroscopic meniscal repair were recruited. During the 'Initial Learning Phase', all subjects performed 12 meniscal repairs on a knee simulator over a 3-week period. A validated motion-analysis tracking system was used to objectively record their performance using the outcomes of 'time taken to complete task', 'distance travelled' and 'total number of hand movements'. The subjects were then randomized into 3 groups: Group A continued to perform one meniscal repair episode each month. Group B performed one meniscal repair episode at 3 months and group C performed no repairs during this 'Interim Phase'. All 3 groups then returned at the 6-month point and carried out a further 12 meniscal repairs over 3 weeks as in the initial learning period. **Results:** All subjects demonstrated significant improvement over the initial 12 episodes for all three motion-analysis parameters ($p < 0.0001$). Most residents had reached a learning plateau by 12 episodes. Group C did not display any loss of skill despite a 6-month break in task repetition ($p > 0.05$). **Conclusion:** In contrast to previous studies, this study does not show any loss of surgical skill after a 6-month period of absence. The use of generic guidelines on minimum task frequency to maintain optimal performance at arthroscopic tasks may not always be appropriate.

Date: 2012-11-28

Session: WHO Mini Symposium - Use of Substance of Human Origin

Time: 14:30 - 16:00

Room: Rashid B

Abstract no.: 31552

KHADRA TISSUE BANK

Mohamed RASHED

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The high demand for bone grafts for patients with polytrauma and complex limb reconstruction has meant that the El-Khadra hospital has had to establish a dedicated bone bank that will aid in reconstructive procedures. The Department of Orthopedics at the El-Khadra Hospital with the technical assistance from The German Hospital of Charetie tissue bank aimed at providing class-leading services. It is the first bone bank in Libya. The bank follows International standards followed by most of the Tissue banks in the world. The bank is currently using well processed and sterilized cortico cancellous bone allografts from tibial slices and femoral heads, revision joint replacement surgeries. So far we did not use bones from amputated stumps in various clinical conditions like comminuted fractures and Non-unions with bone loss of both upper & lower limbs and spinal fusion surgeries.

Date: 2012-11-28

Session: WHO Mini Symposium - Use of Substance of Human Origin

Time: 14:30 - 16:00

Room: Rashid B

Abstract no.: 32099

GIANT CELL TUMOUR OF THE DISTAL RADIUS: WIDE RESECTION AND RECONSTRUCTION BY NON-VASCULARISED PROXIMAL FIBULAR AUTOGRAFT: 10 YEARS FOLLOW UP

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Juxtaarticular giant cell tumours of the lower end radius are common and present a special problem of reconstruction after tumour excision. Out of the various reconstructive procedures described, non-vascularised fibular autograft has been widely used with satisfactory functional results. Ten patients with a mean age of 33.4 years, with either Campanacci grade II or III histologically proven giant cell tumours of lower end radius were treated with wide excision and reconstruction with ipsilateral non-vascularised proximal fibular autograft. Wrist ligament reconstruction and fixation of the head of the fibula with carpal bones and distal end of the ulna using K-wires. Results: The follow-up ranged from 30 to 60 months (mean, 46.8). At last follow-up, the average combined range of motion was 100.5° with range varying from 60° to 125°. The average union time was 7 months (range, 4 to 12). Non-union occurred in 1 case. Graft resorption occurred in another case. Localised soft tissue recurrence occurred in another case after 3 years and was treated by excision. There was no case of graft fracture, metastasis, death, local recurrence or significant donor site morbidity. A total of 3 secondary procedures were required. Conclusions: Enbloc resection of giant cell tumours of the lower end radius is a widely accepted method. Reconstruction with non-vascularised fibular graft, internal fixation with DCP with primary corticocancellous bone grafting with transfixation of the fibular head and wrist ligament reconstruction minimises the problem and gives satisfactory functional results.

Date: 2012-11-28

Session: WHO Mini Symposium - Use of Substance of Human Origin

Time: 14:30 - 16:00

Room: Rashid B

Abstract no.: 31113

**ROLE OF AUTOGENOUS NON VASCULARIZED FIBULAR STRUT GRAFT
IN THE RECONSTRUCTION OF LARGE BONY DEFECTS**

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Introduction: Ten cases of long bone defects were treated with fibular grafting and fixation. The cases included gap non-unions, infected non-unions and defects after tumor resection. Methods: The bone ends were thoroughly debrided and adequate length fibular graft was fixed to the parent bone by k-wires or locking plates. Results: The average time for fibula incorporation was 8 months. There were minor complications that included superficial infections in 3 cases and wire loosening in 2 cases. There were no cases of graft fracture or cases requiring re-surgery.

Date: 2012-11-28

Session: WHO Mini Symposium - Use of Substance of Human Origin

Time: 14:30 - 16:00

Room: Rashid B

Abstract no.: 30867

PASTEURIZED OSTEO-ARTICULAR AUTOLOGOUS GRAFT FOR RECONSTRUCTION OF THE PROXIMAL HUMERUS AFTER RESECTION OF OSTEOSARCOMA

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Introduction: Limb salvage surgery for treatment of malignant bone tumors is an acceptable alternative in most patients. Objectives: For skeletal reconstruction in surgery for bone tumors, pasteurization of bone has been used with favorable results over other methods of recycling. Methods: Ten patients with osteosarcoma of the proximal humerus were treated by wide margin resection and reconstruction with pasteurized osteo-articular autologous bone graft. They were 7 females and three males, between 7 and 30 years of age who were followed up for at least 3 years (mean, 42 months). The ISOLS graft evaluation method was used for evaluation of the radiographs. Results: Eight patients (80%) had complete incorporation of the graft and two patients (20%) had partial incorporation. Viability of the grafts was evaluated by bone scintigraphy. Of 10 patients evaluated, uptake was detected in 7 patients from approximately 6 months postoperatively after which it increased gradually. The functional results were assessed by the system of the Musculoskeletal Tumor Society, and the mean functional rating was 86%. Seven patients have been disease free and three have died of disease. Resorption of the graft was seen in a single, seven years old patient (10%), no fracture or infection were seen. No local recurrence was detected. Conclusions: These results indicate that pasteurization of bone may be a useful option for reconstruction after resection of osteosarcoma of the proximal humerus. The advantages of extracorporeal pasteurization include convenience of use, avoidance of intraspecies infection and allogenic reactions, and satisfactory bone remodeling.

Date: 2012-11-28
Session: Research: Biomaterials I
Time: 10:30 - 12:00
Room: Dubai A+B

Abstract no.: 33193

CORRELATION OF ACHILLES TENDON HEALING WITH ULTRASOUND IMAGING AND BIOMECHANICS

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Introduction: The goal of this study is to utilize ultrasound imaging in tracking tendon healing. We believe that ultrasound will be a strong predictor of the state of tendon repair and biomechanical strength. Methods: 32 male Sprague-Dawley rats underwent transection of the Achilles tendon, which was then repaired with a Mason-Allen stitch. Animals were sacrificed 1, 2, 3, and 4 weeks post-operation. Tendons were harvested for biomechanics and ultrasound analysis. Ultrasound images of the injury site were analyzed using a dithering image analysis algorithm, yielding a quantitative measure of tendon healing. The percent of matrix content of the injury site was analyzed using linear regression with all biomechanical measures. Contralateral tendons were used as controls. Statistical analyses were performed. Results: Biomechanical data demonstrated significant increases in max load, ultimate strength, modulus, and linear stiffness in repaired tendons with time post-operation. Histological analysis showed an improvement in collagen alignment over time. Ultrasound imaging demonstrated a distinct defect easily visible 1 week post-op, and showed that percentage matrix content of the injury site increased over time, reaching ~94% of control. The percentage matrix content was best correlated with linear stiffness of tendons ($R^2=0.98$). Discussion: Our results suggest that ultrasound imaging can be effectively used to correlate the material properties of tendon healing. This technique may be effective in assessing the degree of tendon healing, even potentially indicating return to ADL or sports, and may have applicability to other anatomical sites, such as rotator cuff and flexor tendon.

Date: 2012-11-28

Session: Research: Biomaterials I

Time: 10:30 - 12:00

Room: Dubai A+B

Abstract no.: 32631

FEMORAL BONE LENGTH DIFFERENCES AFTER VARIOUS SIZES OF EPIPHYSEAL GROWTH PLATE INJURIES IN A GROWING RAT MODEL

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Introduction: Growth plate injuries in children can result in severe growth disturbances such as leg length differences. The reason for this discrepancy in growth is a partial ossification of the still cartilaginous growth plate. The aim of this study is to investigate the healing process and tolerance level of an injured epiphyseal growth plate in a growing rat model. Methods: Different sized defects (diameter 1.2, 1.5, 2.0 and 2.4 mm respectively) were drilled into the distal femoral growth plate of growing Sprague Dawley® rats (n=6/group). The right femur was untreated and served as control bone. After 1 week and 1, 3 and 6 months μ CT scans were performed to monitor the healing process and to measure the length of the injured in relation to the untreated leg. At the same time points one rat/group was euthanized and the femoral bones harvested for histological analysis (haematoxylin and Eosin stain as well as Safranin-O-Green stain). All animal experiments were approved by the local ministry of science and technology and conducted under animal ethic respect. (accreditation number: BMWF-66.010/0087-II/3b/2011) Results: Both μ CT monitoring and histological analysis confirmed the formation of a bone bridge in the growth plate of the rats from all groups. After 6 months we observed a significant leg length difference in the group with 1.5 mm diameter defect size ($p=0,024$). Conclusion: Our study showed that growth plate injury leads to formation of a bone bridge independently of the injury side accompanied by leg length differences after a certain time period.

Date: 2012-11-28
Session: Research: Biomaterials I
Time: 10:30 - 12:00
Room: Dubai A+B

Abstract no.: 32264

EVALUATION OF KNEE CARTILAGE AND SUBCHONDRAL BONE USING ARTHROSCOPIC ULTRASOUND IMAGING

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Objective: Evaluation of articular cartilage and subchondral bone is essential in diagnostics of joint diseases and injuries. However, the inter-observer reliability of the arthroscopic grading of cartilage lesions is reported to be poor and the arthroscopic assessment of chondral injuries and osteochondritis dissecans (OCD) is challenging. For more objective evaluation of cartilage and subchondral bone ultrasound arthroscopy has been introduced. The feasibility and clinical value of high frequency ultrasound was investigated in knee arthroscopy. Methods: Six patients with cartilage related knee disorders were included. Ultrasound imaging was conducted with a 9 MHz ultrasound catheter inserted into the joint during knee arthroscopy. Ultrasound images and arthroscope view were synchronously recorded. Ultrasound reflection coefficient, integrated reflection coefficient, apparent integrated backscattering and ultrasound roughness index were determined from the cartilage and subchondral bone. Conventional arthroscopy and ultrasound imaging was combined when ICRS grade and specific surgery for each defect was determined. Results: Ultrasound arthroscopy enabled detection and measurement of lesions and evaluation of cartilage quality, changes in subchondral bone and menisci. Fluid between the bone-cartilage interface indicating an unstable OCD needing fixation was identifiable and even OCD not detected by conventional arthroscopy were visualized. Furthermore, ultrasonic visualization of retrograde drilling was possible. Conclusions: Quantitative ultrasound provides diagnostically valuable information on articular cartilage and subchondral bone. The cartilage quality, after trauma or reparative surgery, and the location, extent and stability of lesions can be evaluated. Not to mention the possibility to use ultrasound to aid retrograde drilling of OCD.

Date: 2012-11-28
Session: Research: Biomaterials I
Time: 10:30 - 12:00
Room: Dubai A+B

Abstract no.: 33071

COMBINED APPROACHES TO REDUCE INTRA-OPERATIVE BLOOD LOSS DURING PLANNED SURGICAL INTERVENTIONS OF MAJOR JOINTS

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Aim: To develop and introduce an optimal strategy in clinical practice by compensating the blood loss during surgeries with the patient's own blood. **Materials and methods:** Data of 1800 patient's (1400 autodonors, 400 recipients of donors blood) laboratory examination and results of functional control who underwent planned surgeries of major joints were analyzed in the study. In 75 patients, intraoperational blood sampling was performed using foreign and local separators (sampling, separating autoerythrocytes) and was returned immediately during surgery. In 50 patients, postoperative blood sampling was performed in the first 6 hours after surgical intervention with the help of special systems for sampling and filtration of drained blood. In the control group with 400 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. In 72 patients, Trenexam acid (15mg/kg preoperatively and 6 hrs after surgery) is used which helped to reduce blood loss up to 30%. **Summary:** Administration of autohemotransfusion allowed us to decrease the general necessity of donor's blood up to 90% and dismissed the use of donor's blood components during planned cementless replacement of hip joint. Donor's blood components were used in 7% during cement fixation of endoprosthesis of hip joint, whereas 30% during revisional endoprosthesis of hip joint.

Date: 2012-11-28
Session: Research: Biomaterials I
Time: 10:30 - 12:00
Room: Dubai A+B

Abstract no.: 33061

**ANTI-TGF-BETA ANTIBODY COMBINED WITH DENDRITIC CELLS
PRODUCE ANTITUMOR EFFECTS IN OSTEOSARCOMA**

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Introduction: We previously reported the combination of tumor cryotreatment with dendritic cells to promote antitumor immunity. The effect of the combination treatment with dendritic cells and antitransforming growth factor-beta (anti-TGF-beta antibody on the elimination of regulatory T cells and the inhibition of tumor growth was investigated. The effect of the combination treatment with dendritic cells and anti-TGF-beta antibody on the enhancement of systemic immune responses and inhibition of metastatic tumor growth was investigated in a murine osteosarcoma (LM8) model. **Materials and Methods:** To evaluate activation of the immune response, we established the following three groups of C3H mice (60 mice total): (1) excision only; (2) tumor excision and administration of anti-TGF-beta antibody; and (3) tumor excision and administration of dendritic cells exposed to cryotreated tumor lysates with anti-TGF-beta antibody. **Results:** The mice that received dendritic cells exposed to cryotreated tumor lysates with anti-TGF-beta antibody showed increased numbers of CD8(+) T lymphocytes, reduced regulatory T lymphocytes in the metastatic lesion, and inhibition of metastatic growth. The combined therapy group showed reduced numbers of regulatory T lymphocytes in the spleen and high serum interferon γ level. **Conclusions:** The control of the inhibitory condition induced by regulatory T cells is important to improve the suppression of the cytotoxic lymphocytes. Combining dendritic cells with anti-TGF-beta antibody enhanced the systemic immune response. We suggest that our immunotherapy could be developed further to improve the treatment of osteosarcoma.

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Room: Dubai A+B

Abstract no.: 33060

THE RESULTS OF INTRA-ARTICULAR POLYACRYLAMIDE GEL INJECTION FOR COMPENSATION OF SYNOVIAL FLUID VISCOSITY IN PATIENTS WITH OSTEOARTHRITIS OF KNEE JOINT

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Aim: To investigate effectiveness and duration of action of intra-articular administration of polyacrylamide gel for treatment of osteoarthritis. **Materials and methods:** We provide statistically processed results of knee joint osteoarthritis treatment by intra-articular administration of gel. Polyacrylamide gel doesn't occur in living organisms, it is not exposed to enzymatic transformation in joint cavity and it fulfills the function of matrix for short chains of hyaluronan as well as independent viscosity corrector. This factor defines the duration of its action. 303 patients (186 women) with unilateral or bilateral osteoarthritis of stage 2-4 according to Kellgren's scale participated in the study. Patients with osteoarthritis of stages 2 and 3 prevailed. During the period of study (0-24 weeks), no other treatment was applied. Single intra-articular injection of 5 ml of gel was performed. The joint condition was estimated according to Lequesne's scale on the day of procedure, after 1, 3, 6, 24 weeks. Statistical analysis was performed using SPSS software. Parametric and non-parametric indices were used. **Results:** The decrease of Lequesne's index and improvement of certain indices in all study groups were observed, though the dynamics depended on process stage and duration of monitoring. The effect was observed 24 weeks after the administration as well. **Conclusion:** Intra-articular administration of polyacrylamide gel in case of knee joint osteoarthritis demonstrates good functional results and safety in long-term usage.

Date: 2012-11-28

Session: Research: Biomaterials I

Time: 10:30 - 12:00

Room: Dubai A+B

Abstract no.: 33050

ASSESSMENT OF THE POTENTIAL OF STEM CELL SEEDED PEOT/PBT SCAFFOLD FOR OSTEOCHONDRAL REPAIR IN VIVO

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Introduction: In this project we assessed the potential of PEOT/PBT scaffold - in rabbit model - as vehicle to position the cells within osteochondral defect and to provide the required mechanical support for the healing process. Methodology: The morphology of the scaffold was examined by electron microscopy (SEM) of gold-coated samples looking at pore size, distribution and fibre sizes. Rabbit MSC were harvested and isolated from bone marrow aspirate obtained from the tibiae of New Zealand white rabbits (n=3). The defects created in the medial femoral condyle of 9 male rabbits. The knee joints were harvested after 12 weeks and sectioned at 5 micron and stained using Haematoxylin & eosin and Toluidine Blue. Results: The morphological appearance of the harvested knees demonstrated better repair for the MSC-seeded scaffolds compared to the cell free scaffolds and the empty defects. Macroscopic appearance of the defects containing cell-seeded scaffolds exhibited a smoother surface, better margin integration, and favourable compressibility in comparison to normal cartilage. Discussion: The material did not show any adverse cytotoxic effects on the cells. Defects containing MSC seeded scaffolds appeared similar to native cartilage with no evidence of inflammation, improved neo-cartilage formation and integration. A significant leap forward has been made in the development of rabbit MSC as a cell source for cartilage repair. The multi-layered PEOT/PBT scaffold has been shown to be a suitable delivery vehicle for these cells, thereby edging closer to regenerative medicine solution to a clinical orthopaedic problem.

Date: 2012-11-28
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Time: 10:30 - 12:00
Room: Dubai A+B

Abstract no.: 33075

ASSOCIATION OF IL-6 AND TGF- β 1 GENE POLYMORPHISMS WITH HIP OSTEOARTHRITIS

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Background: Developmental hip dysplasia (DDH) greatly contributes to occurrence of severe hip osteoarthritis (OA) in adulthood, but the association between the two is not a perfect one. Both conditions are known to have a strong genetic component. Transforming growth factor b1 (TGF-b1) and interleukin-6 (IL-6) are two pro-inflammatory cytokines included in pathogenesis of OA, bone remodeling and development of bone and joint tissues. TGF-b1 gene has a polymorphic site in the signal sequence (29T©C) and "C allele carriage" is associated with higher circulating TGF-b1 levels. IL-6 gene has several polymorphic sites in the promoter region including -572T©C transition associated with higher circulating IL-6 levels. We aimed to evaluate a possible association between these polymorphisms and severe adult hip OA secondary to DDH. Methods: Consecutive patients with severe adult hip OA secondary to DDH (requiring hip replacement) (n=68, 22% men, age 27-64 years) and healthy controls (n=20, clinically and radiologically excluded DDH/OA) were genotyped at these loci. Results: With adjustment for sex, "C allele carriage" in the TGF-b1 signal sequence and GG genotype at locus -572 in the IL-6 promoter were each associated with severe OA secondary to DDH (OR=5.94, 95% CI 1.13-31.2, p=0.016; and OR=9.91, 95% CI 2.03-48.4, p=0.005; respectively). Conclusion: Data from this preliminary analysis support feasibility of larger-scale studies on potential association between TGF-b1 signal sequence and IL-6 promoter polymorphisms and occurrence of DDH and (un)related severe OA.

Date: 2012-11-28

Session: Research: Biomaterials I

Time: 10:30 - 12:00

Room: Dubai A+B

Abstract no.: 32493

IGF – 1 INCREASE WITH HYPERBARIC OXYGEN THERAPY AND PROMOTES WOUND HEALING IN DIABETIC FOOT ULCER

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Introduction: To investigate the whether Insulin-like Growth Factor I (IGF – 1) altered with the Hyperbaric Oxygen Therapy (HBOT) in diabetic foot ulcers and to quest if IGF – 1 is a predictive indicator of wound healing in those patients. Methods: We treated 48 patients with diabetic foot ulcer with HBOT. IGF – 1 was measured before and at the end of HBOT. Alterations were recorded and compared with the initials. Furthermore, alterations of the IGF-1 in patients whose wound healed with HBOT were compared with patients' who couldn't draw benefit from HBOT. Results: Wound healing was obtained in 40 patients with HBOT. There was no significant difference in initial IGF – 1 between two groups ($p=0.399$). IGF-1 increased to average 201,12 (SD 92,69) from 152,36 (SD 66,93) with HBOT ($p<0,05$). In healed group, the mean IGF – 1 increase was 61.17 (SD 59.84), and the final values was significantly higher ($p < 0.05$). In non-healed group, the mean IGF – 1 increase was minus 13.33 (SD 25.67) and the final values were not significantly different ($p > 0.05$). The increase of IGF – 1 with HBOT was significant higher in healed group ($p < 0.001$). Conclusion: We obtained healing in most of diabetic foot ulcer with HBOT. IGF – 1 increased significant in healed group. We think that HBOT is effective on treatment of diabetic foot ulcer with elevation of IGF – 1. This alteration seems to be a predictive factor for wound healing in diabetic foot ulcer with HBOT.

Date: 2012-11-28
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Time: 10:30 - 12:00
Room: Dubai A+B

Abstract no.: 32989

THE PREVALENCE OF EXTRA-ARTICULAR PATHOLOGY IN SYMPTOMATIC PATIENTS WITH FEMOROACETABULAR IMPINGEMENT

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Introduction: Femoroacetabular impingement (FAI) is a well-recognised cause of the painful hip in the young adult. Recently the differential diagnosis of the painful hip has expanded to include a number of extra-articular conditions. To date, there is no literature regarding the prevalence of extra-articular pathology in symptomatic patients with FAI. Objective: This study was conducted to determine the prevalence of extra-articular pathology in symptomatic patients with FAI. Methods: All patients included in the study were managed by the senior author between 2008 and 2011. All were diagnosed to have symptomatic (FAI) confirmed with magnetic resonance images (MRI) and hip arthroscopy with excision of impingement lesion(s). All the preoperative hip/pelvis MRI images were reviewed randomly by a single musculoskeletal radiologist assessing for the prevalence of any extra-articular pathology. Dynamic ultrasound of the hip region was conducted when history of snapping in the hip joint was present. Results: A total of 101 patients were included in this study; (M:48-F:53). The average age of the patients was 37 years (r17–71). Extra-articular pathology was identified in 43 patients (43%). A single pathology was identified in 23 patients while multiple pathologies were present in 20 patients. The commonest forms of co-existing extra-articular abnormalities were gluteus-medius tendinitis n=21(21%), osteitis pubis n=9(9%) and iliopsoas pathology n=7(7%). Conclusions: In our study 43% of patients with symptomatic FAI had a co-existing extra-articular pathology with nearly half of these having multiple pathologies. This finding demonstrates the importance of elucidating intra-articular versus extra-articular pathology in patients with hip pain.

Date: 2012-11-28

Session: Research: Biomaterials II

Time: 14:30 - 16:00

Room: Dubai A+B

Abstract no.: 31690

**FREE MESENCHYMAL STEM CELLS SCAFFOLD FOR BONE HEALING:
HISTOLOGICAL, RADIOLOGICAL AND BIOMECHANICAL EVALUATION**

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Introduction: Increasing incidence of fractures and the slow repairing process especially in nonunion and delay union fractures has led to focus on the potential of stem cells as a novel strategy for bone repair. Materials and methods: In this experiment, twenty adult male New Zealand Albino rabbits were divided into 2 equal groups. An incision was made by osteotome on the middle portion of each radius at least twice as long as the diameter of the diaphysis for creation nonunion model in all animals. In first group, the created defects were filled with free mesenchymal stem cells scaffold obtained from subcutaneous fat by direct injection. In second group defects remained as control without any treatment. Radiographic evaluation performed every 3 weeks, nine weeks after operation the rabbits were euthanized pharmacologically for biomechanical and histopathological evaluation. Results: In all animals radiological evaluation showed the defect was filled with woven bone and fibrous tissue, but remodeling of the newly formed woven bone into lamellar bone was present in treated groups. Generally, the histological sections revealed that in defects treated with mesenchymal stem cells, the amount of newly formed bone was larger and fibrous tissue formation was less than in defects in control group. The results of biomechanical load test showed treated group significantly better than control group. In conclusion, subcutaneous fat derived mesenchymal stem cells could be the promising cell sources for the treatment of nonunion fractures.

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Room: Dubai A+B

Abstract no.: 30936

ANTIBIOTIC-COATED PIN CAN PREVENT PIN-TRACT INFECTION OF EXTERNAL FIXAT

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Pin tract infection is one of the most common complications associated with the use of external fixation. We used a monolateral external fixator with 4 half pins on the tibial diaphysis of the 10 rabbits, which were divided into two groups, one group with hydroxyapatite and antibiotic coated half pins, and the second group with simple stainless steel pins. All pin sites were injected with staphylococcus aureus 5 days after operation. Two weeks after surgery, we harvested the tissue from around all the pins for smear and culture (Microbiologic examinations). Pin tract infection occurred in all simple pins without antibiotic coating but no case of infection was observed at the antibiotic coated pins' sites.($p < 0.01$). Hydroxyapatite coated pin with antibiotic can be used safely for prevention of pin tract infection in human beings.

Date: 2012-11-28

Session: Research: Biomaterials II

Time: 14:30 - 16:00

Room: Dubai A+B

Abstract no.: 32800

EFFECT OF INOCULATION TIME ON STAPHYLOCOCCAL INFECTION OF TITANIUM AND STAINLESS STEEL IMPLANTS

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The majority of orthopedic implants used today are made of stainless steel, titanium or cobalt-chrome alloys. Among different complications implant related infection seriously interferes with treatment outcome. The most commonly cultured microorganisms causing implant related infections are staphylococci. The effect of inoculation time on susceptibility to staphylococcal infection of different implant materials in vivo is unclear. The interaction of biofilm-forming and non-biofilm-forming *Staphylococcus* (*S.*) *aureus* and *S. epidermidis* strains with titanium, smooth and rough stainless steel surfaces was studied by scanning electron microscopy in vitro and in a subcutaneous mouse tissue cage model in vivo. In vitro *S. epidermidis* adhered equally and more strongly than *S. aureus* to all materials. In vivo 300 cfu *S. aureus* led in all metal cages to an infection with high numbers of planktonic bacteria after 8 days; only 0.89 % of total *S. aureus* were adherent to metal surface. In contrast, for postoperative infection with *S. epidermidis* 10⁶ cfu were required; in all metal types planktonic bacterial numbers dropped to <100 cfu, adherent cfu were low in biofilm-forming and absent in non-biofilm-forming --infected cages after 14 days. Perioperative inoculation resulted in slower clearance than postoperative inoculation, and in titanium cages adherent biofilm forming bacteria survived in higher numbers than non-biofilm forming bacteria. In conclusion, the metal played minor role regarding susceptibility to and persistence of staphylococcal infection and *S. epidermidis* was more pathogenic when introduced during implantation than in cases when introduced 14 days after implantation.

Date: 2012-11-28
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Time: 14:30 - 16:00
Room: Dubai A+B

Abstract no.: 32454

ANTI-INFLAMMATORY AND ANTI-ANGIOGENETIC EFFECT OF SIMVASTATIN ON PLATELET- AND LEUCOCYTE ENDOTHELIUM CELL INTERACTION IN ANTIGEN INDUCED ARTHRITIS IN MICE KNEE JOINT IN VIVO

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Introduction: Statins have been used so far as lipid-lowering drugs in patients with hypercholesteremia and for cardiovascular prevention. In recent years, anti-inflammatory as well as immunmodulating effects have been discussed. Aim of this study was to show the effect of simvastatin in vivo at an antigen induced arthritis mice model via intravital fluorescence microscopy. Method: Arthritis has been induced to the mice knee joint of C57/Bl6 mice (Brackertz et al). Animals have been separated into 4 groups each 7 animals: 1.group: no AiA, therapy using vehicles; 2.: no AiA, therapy using simvastatin (40mg/kg); 3.: AiA, vehicles; 4.: AiA, simvastatin. Therapy started on the day of induction and has been applicated intraperitoneally for 14 days daily. Knee joint diameter, the fraction of rolling / adherent platelets / leucocytes, vascular density were measured via IVM. Results: The arthritis group treated with statin showed a significant reduction of platelet and leucocyte endothelium cell interaction as well as significant reduction of the vascular density compared to the control group. In regard of the knee joint diameter we were also able to see a significant reduction during the last 6 days of therapy until the day of surgery. Summary: The therapy with simvastatin led to a significant reduction of platelets and leucocyte endothelium cell interaction as well as vascular density and knee joint diameter as clinical parameters. This study confirms the theory, that statins have an anti-inflammatory and anti-angiogenetic effect on the inflammatory reaction in arthritis and a clinical use could mean a promising therapy option.

Date: 2012-11-28

Session: Research: Biomaterials II

Time: 14:30 - 16:00

Room: Dubai A+B

Abstract no.: 32325

NOVEL MODEL FOR IMPLANT RELATED INFECTIONS IN RATS

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Objective: Different models of implant related infections exist but the amount of bacteria (colony forming units, CFU) to be used in such models is controversial. The aim was to evaluate a novel model of implant related infections in rats. Materials and Methods: A cannulated conical implant (Ti6Al4V) was inserted bilaterally in the rats' medial proximal tibia. Six different concentrations (107 CFU, 106 CFU, 105 CFU, 104 CFU, 103 CFU and 102 CFU/15µl) of *S. aureus* were inoculated into the implant after implantation. Controls received phosphate-buffered saline. 36 animals were followed for six weeks. Radiographs were taken post-operatively, three weeks after implantation and prior to sacrifice. Infection was evaluated by microbiological investigation using swabs, CFU/ml bone and sonification fluid of the implant. Histological investigation as well as micro computed tomography and scanning electron microscopy (SEM) were performed. Results: All animals inoculated with *S. aureus* developed microbiological signs of infection from the intra-operative swabs as well as the sonification fluid of the implant and the bones (CFU/ml). Microbiological specimens from the controls remained sterile. No correlation could be established between bacteria population size at sacrifice (CFU) and originally inoculated CFU. Microbiological findings are supported by the findings of bacteria and biofilm formation from SEM. Discussion and Conclusion: It is possible to induce an implant related infection in rats with this model, even using relative low bacterial inocula. The constant population size at sacrifice for the different concentrations inoculated is due to forming maximum possible bacterial population size.

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Abstract no.: 32080

PLANTAR FASCIOPATHY TREATED WITH EXTRACORPOREAL SHOCKWAVE THERAPY WITHOUT LOCAL ANAESTHETIC BLOCK: A META-ANALYSIS OF PROSPECTIVE RANDOMISED CONTROL TRIALS

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Objective: A meta-analysis of the published literature comparing extracorporeal shock wave therapy (ESWT) with a placebo for the treatment of plantar fasciitis when no local anaesthetic has been used. Methods: Electronic databases were searched from January 1980 to January 2012. A systematic review was performed on prospective randomised controlled trials to obtain a summative outcome. Results: Seven randomised control trials incorporating 663 patients were included in this study. There were 369 in the placebo group and 294 in the ESWT group. Patients had significantly better visual analogue pain scores (VAS) after ESWT compared with placebo at 12 weeks [fixed effects model: SMD=0.35, 95% CI (0.12, 0.59), z =2.94, p=0.003. There was a significantly greater reduction in overall heel pain after 12 weeks with the ESWT group also [fixed effects model: SMD=0.60, 95% CI (0.34, 0.85), z=4.64, p<0.001. Conclusions: Extracorporeal shockwave treatment is safe and effective in the treatment of chronic plantar fasciitis refractory to conservative treatments. Significantly improved pain scores compared to placebo were evident at 12 weeks post treatment. There is some evidence that ESWT treatment may help to reduce pain as long as 6 to 12 months post treatment. We recommend the use of ESWT for patients with significant heel pain despite a minimum of 3 months of conservative treatment.

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Time: 14:30 - 16:00

Room: Dubai A+B

Abstract no.: 32078

PLATELET RICH PLASMA VERSUS CORTICOSTEROIDS FOR THE TREATMENT OF CHRONIC LATERAL EPICONDYLITIS: A RANDOMIZED STUDY OF 48 PATIENTS

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In chronic lateral epicondylitis, there is pain and discomfort associated with angiofibroblastic hyperplasia, at the extensor muscle group origin at the lateral humeral condyle insertion, principally in the extensor carpi radialis brevis (ECRB) tendon. Many methods of treatment are available but the results of most are unclear. Recently there have been reports in which Platelet-rich plasma (PRP) has shown promising outcome. This study was designed to determine the effectiveness of PRP compared with corticosteroid injections in patients with chronic lateral epicondylitis. Forty eight consecutive patients with duration of symptoms more than 6 months were randomly allocated into 2 groups. Group A (n=24) was treated with a 40 mg methylprednisolone acetate injection and Group B (n=24) with 3 mL of autologous platelet concentrate injection by peppering technique. A standardized program of eccentric muscle strengthening was followed by all patients in both groups. The primary analysis included visual analog scale (VAS) pain scores and Disabilities of the Arm, Shoulder and Hand (DASH) outcome scores, assessed before intervention and on final follow up at 1 year. Mean visual analog scale scores in Group A and Group B decreased from 7.82 and 7.64 to 4.57 and 2.57 respectively. There was also significant difference in DASH scores among the 2 groups at final follow up, with the mean scores for corticosteroid dropping from 30 to 20, compared with 28 to 13 for PRP injections. Treatment of patients with chronic lateral epicondylitis with PRP significantly improves function and reduces pain, exceeding the effect of corticosteroid injection.

Date: 2012-11-28
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Time: 14:30 - 16:00
Room: Dubai A+B

Abstract no.: 32151

TARGETED FOOT AND ANKLE INJECTION WITH ULTRASOUND GUIDANCE IN THE RADIOLOGY DEPARTMENT REDUCES THE NUMBER OF PATIENTS REQUIRING INJECTION IN THEATRE

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Introduction: Foot and ankle pain is common, with causes including osteoarthritis, tendonitis and fasciitis. Targeted injection with local anaesthetic and corticosteroid can be used for diagnostic and therapeutic purposes. This can be performed in theatre, or in clinic with ultrasound guidance. Methods: Foot and ankle injections performed in theatre by a single Orthopaedic consultant from January 2007 to December 2010 were audited based on log-book entries. Those referred for ultrasound-guided injection during this period were also recorded. These were performed by a Musculoskeletal consultant radiologist. The costs for these were calculated using clinical coding data and compared between the two settings. Results: The number of injections performed in theatre has reduced markedly, from 134 in 2007, 118 in 2008, 43 in 2009 and 28 in 2010. Concurrently, the number of ultrasound-guided injections performed in the radiology department had risen from 10 in 2008, 41 in 2009, and 100 in 2010 (correlation coefficient 97%). A case performed in theatre costs the trust £1229, although it receives only £630 from the PCT for each; a loss of £599. A case performed in the radiology department costs £206, saving £393 per patient, with projected savings of £58,164 in 2011. Discussion: A distinct correlation between the increased number of ultrasound-guided foot and ankle injections in the radiology department, and a subsequent reduction in theatre cases has been demonstrated. Close co-operation between orthopaedic Foot and Ankle surgeons and Musculoskeletal radiology specialists produces massive savings in theatre costs and time, and a more efficient patient pathway.

Date: 2012-11-28

Session: Research: Biomaterials II

Time: 14:30 - 16:00

Room: Dubai A+B

Abstract no.: 32596

PATIENT SPECIFIC INSTRUMENTATION FOR SHOULDER ARTHROPLASTY

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Introduction: Patient specific instrumentation is a valuable tool in arthroplasty. While the operation is performed similar as with traditional instrumentation 3 dimensional computer assistance and pre-op planning is embedded into the laser-sintered tool. This method is clinically available for TKA. Aim of our pilot study was to evaluate this method in shoulder endoprosthesis. Methods: A generic tool to guide drilling of the central k-wire for reaming the glenoid was designed with Solidworks (Dassault Systèmes). Three models of the intact scapula (Sawbones, #1012) were obtained and scanned using a clinically available CT with a voxel edge length of about 1 mm. The scapulae were segmented using Amira (Visage Imaging) and a surface CAD model was generated in Geomagic Studio (Geomagic, Inc.). With boolean operations a patient specific tool for each of the scapulae was created in Geomagic Studio and was laser-sintered in PA 2200 (Shapeways). The tools were used to guide a drill through the scapulae. Results: The entry and exit points in the models were compared to the planning using scaled photographs. The position of the entry point completely matches the planning, the line of the drill shows a deviation of less than 0.8° from the planned trajectory. Discussion: The placement of the central k-wire into the glenoid is most critical as field of view is severely limited and the bone quality of the glenoid will only allow a very reduced number of tries. The proposed technique simplifies this critical step while accurate results can be obtained.

Date: 2012-11-28

Session: Miscellaneous: Rheumatology

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 33005

PREVALENCE, CLINICAL FEATURES AND OUTCOME OF TREATMENT OF MYOFASCIAL PAIN SYNDROME AMONG 6563 CASES OF WORK RELATED MUSCULOSKELETAL DISORDERS

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Myofascial Pain Syndrome (MPS) is one of the most common, non articular forms of musculoskeletal pain. MPS is associated with "hyperirritable spots" or "trigger points" within palpable taut bands of skeletal muscle or fascia that are painful on compression. The aim of this study was to estimate the prevalence and to describe the clinical features and outcome of treatment of MPS among cases of Work Related Musculoskeletal Disorders (WRMSD). This retrospective study covered 6563 clients diagnosed with WRMSD, with a mean age 30 ± 5.92 years. The relevant clinical data were extracted from the treatment chart of WRMSD patients who received treatment at a Rehabilitation Centre. A single Orthopaedic Surgeon performed the clinical assessment and made the diagnosis of MPS using the modified Simons Criteria. All the clients received a sequenced, multidisciplinary treatment protocol incorporating manual physical therapy, mind body approaches and exercises. In terms of diagnosis, the prevalence of MPS was the highest with 44%. Among the cases of MPS, 75% were male and 25% were female. 41% of the participants were working for 8-12 hours. The commonest job categories of the participants were Managerial (28%), Software engineers (27%) and Application Engineers (22%). The regional pain distributions were lower back pain (63%), neck pain (56.2%), thigh pain and foot pain (34%), shoulder pain (27%) and knee pain (23%). 96% of clients diagnosed with MPS reported a complete recovery. In view of the high prevalence of MPS, Orthopaedists need to be familiar with the current approaches to diagnosis and treatment.

Date: 2012-11-28
Session: Miscellaneous: Rheumatology
Time: 17:00 - 18:30
Room: Dubai A+B

Abstract no.: 32722

THE IMPACT AND COST EFFECTIVENESS OF COLLAGENASE ON THE MANAGEMENT OF DUPUYTRENS DISEASE

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Background: Xiapex (Injectable collagenase, Pfizer pharmaceuticals) was recently approved by the MHRA for clinical use. The main objective of this study was to assess the proportion of patients with Dupuytren's disease that are suitable for treatment with collagenase and the financial implications of its introduction. Methods: All new patients diagnosed with Dupuytren's disease over a three month period (Sept-Nov) were enrolled into study. All patients with a palpable Dupuytren's cord without significant skin tethering were offered collagenase. Comparisons were made with the corresponding quarter in the previous 2 years. Management trends were compared over the three years (2009-11) to identify the impact of collagenase. Cost effectiveness analysis was based on a comparison with costs incurred by a fasciectomy. Results: 23 (36.9%) of 58 patients received collagenase in the time period it was available. Needle fasciotomies were not performed once collagenase was introduced. There was a significant reduction in the number of fasciectomies performed over the three year period. 42% (28/58) of procedures performed were fasciectomies in 2010 this had significantly fallen to 32% (21/58) in 2011. Cost effectiveness analysis revealed a significant reduction in cost with collagenase. With similar end points injectable collagenase was 30% cheaper than a fasciectomy. Conclusions: Up to 40% of patients with established Dupuytren's disease maybe suitable for management with collagenase. This represents a cost-effective, clinically effective non-surgical option in the management of Dupuytren's disease.

Date: 2012-11-28

Session: Miscellaneous: Rheumatology

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 32400

PLACE OF THE USE OF CLOSTRIDIUM HISTOLYTICUM COLLAGENASE FOR DUPUYTREN'S DISEASE: PRELIMINARY RESULTS

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Objectives: Dupuytren's contracture can now be treated by in situ injection of Clostridium histolyticum collagenase. The objective of this prospective study was to analyse the safety and efficacy in our first series. Method: Fifteen patients, with a mean age of 55 years (29 to 69 y.) were treated. 0.25mL collagenase was injected at the palm for metacarpophalangeal joint (MCP) contracture, or 0.2mL at the base of the digit for proximal interphalangeal joint (PIP) contracture. At day 1, a manual extension procedure under local anaesthesia was performed, with clinical follow-up at day 7, 30 and 90. Each patient received up to 5 injections at one-month intervals with a maximum of 3 injections per digit. Results: Eighteen fingers (5 MCP, 10 PIP and 3 combined lesions) were injected. Four fingers had been previously treated by fasciectomy. The mean lack of extension was 76° per digit (30-140°), 49° for MCP and 61° for PIP. An overall gain of 48° per digit (10-130°), 44° per MCP and 34° per PIP, was obtained at three months. Eight fingers (45%) presented complete or almost complete extension with a residual deficit of less than 10°. The injected cord disappeared in all cases and contracture of the hand was always relieved. Only minimal adverse effects were observed, such as spontaneously resolving oedema and haematoma. Conclusion: These preliminary results are very encouraging, as an improvement was always observed. Clostridium histolyticum collagenase could now be a true alternative to aponevrotomy and aponevrectomy, even if some surgical indications will remain.

Date: 2012-11-28

Session: Miscellaneous: Rheumatology

Time: 17:00 - 18:30

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Abstract no.: 32266

A CONSECUTIVE CONTROLLED CLINICAL SERIES COMPARING THE EFFICACY OF HIGH MOLECULAR WEIGHT HYALURONAN INJECTIONS PERFORMED IN A BLIND FASHION AND UNDER ULTRASOUND-GUIDANCE IN THE TREATMENT OF KNEE OSTEOARTHRITIS

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Introduction: Viscosupplementation consists of injecting exogenous hyaluronate (HA) into the synovial joints. Efficacy might be related to the rheological properties and molecular weight (MW) of the hyaluronate preparations. This open, consecutive clinical series was evaluated in order to compare the effect of using ultrasound-guidance in order to improve the efficacy, and safety of injections of high-molecular weight hyaluronate. Methods: Fifty-one patients undergoing blind injections were compared with a consecutive series of thirty-four patients undergoing ultrasound-guided injections. All underwent three weekly injections, and there were no drop-outs. Follow-up VAS pain score was assessed up to one year after treatment. Accuracy of intra-articular location of the needle tip was verified in the ultrasonography group. Adverse events (pain reactions) were noted. Results: The groups appeared to be similar in demographics including: age, gender, presence of diabetes and pre-treatment pain score as well as WOMAC score. The patients were mostly over-weight and slightly more so in the blind injection group. Any increase of VAS score two days after the first injection was considered as an adverse event. There were significantly less pain reactions in the ultrasound-guided group (8%) as compared with the blind-injection group (37%). In the ultrasound guided group first needle insertion was intrasynovial in a third. Extra-capsular needle misplacement did not occur in this study. Discussion: It appears that ultrasound guided injections are less likely to be associated with pain reaction, and there is a trend for better clinical results in this group than in the blind injection group.

Date: 2012-11-28
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Time: 17:00 - 18:30
Room: Dubai A+B

Abstract no.: 31879

COMPLICATION RATES OF SURGICAL PROCEDURES PERFORMED IN RHEUMATOID ARTHRITIS PATIENTS RECEIVING BIOLOGIC AGENTS

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Objective: This study investigated the surgery-related complication rates of patients who had rheumatoid arthritis (RA) and were receiving biologic agents. **Methods:** We evaluated patients who had RA, were undergoing biologic agent therapy, and underwent surgery. Complication rates were compared in terms of the type of surgery and drugs used. **Results:** We included 60 patients who had RA and underwent surgery during 2005-2011. The study population comprised 50 women and 10 men: the mean age was 60 years (age range, 24-81 years). The mean disease duration was 11 years. Fifteen patients underwent surgery more than twice. Sixty-seven orthopaedic and 15 non-orthopaedic surgeries were performed. The orthopaedic surgeries included 17 total knee arthroplasties, 13 total hip arthroplasties, 3 total shoulder arthroplasties, 3 total elbow arthroplasties, and 6 hip joint fractures. Ten tumour resection surgeries were performed, including those for lung, colon, gastric, and renal cancers. At the time of surgery, infliximab was being used in 27 cases, etanercept in 34, adalimumab in 10, tocilizumab in 9, and abatacept in 2. A patient with ileus of the colon died because of recurrent postoperative peritonitis. Surgical site infection occurred in 1 spinal surgery case. **Conclusion:** Using biologic agents in RA may not cause any specific perioperative complications or adverse events for both orthopaedic and non-orthopaedic surgeries. Awareness of the risks related to surgery performed on patients undergoing biologic agent therapy is important.

Date: 2012-11-28

Session: Miscellaneous: Rheumatology

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 31436

PREVENTION OF CELECOXIB INDUCED ENDOSCOPIC UPPER GASTROINTESTINAL ULCERS BY CONCOMITANT THERAPY WITH REBAMIPIDE, AN ANTI-ULCER AGENT

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Introduction: Although a selective cyclo-oxygenase-2 (COX-2) inhibitor reduces the risk of upper gastrointestinal (GI) ulcer complications, the use of a COX-2 selective inhibitor cannot completely prevent GI ulcer. Therefore, supportive therapeutic option is needed. Rebamipide, an anti-ulcer agent, increases gastric mucous and stimulates the production of endogenous prostaglandins. We aimed to confirm the hypothesis that combined treatment with celecoxib and rebamipide would be more effective than celecoxib alone for prevention of upper GI ulcer. Methods: This prospective, randomized open blinded-end-point study was conducted. We enrolled patients with rheumatoid arthritis, osteoarthritis, and low back pain, and randomized them to celecoxib (mono-therapy) or celecoxib plus rebamipide (combination therapy). Patients took these drugs for 3 months. The occurrence of endoscopic upper GI ulcer and erosion were evaluated. Results: Sixty-five patients with a mean age of 68 years were analyzed (16 males, 49 females). Thirty-four patients were assigned to the mono-therapy group, and 31 were in the combination-therapy group. The prevalence of upper GI ulcer was 5/34 (15%) in mono-therapy group and 0/31 (0%) in combination-therapy group at 3 months ($p = 0.0263$). The prevalence of erosion was 24 of 34 (71%) in mono-therapy group and 9 of 31 (29%) in combination-therapy group. Conclusions: Use of celecoxib for 3 months induced upper GI ulcer in 15% of patients. Rebamipide showed supportive action for celecoxib-induced GI ulcer, 0% of prevalence ratio, and our hypothesis was verified. Rebamipide could be candidate option for the prevention of COX-2 inhibitor induced GI events.

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Session: Miscellaneous: Rheumatology

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 31722

PLATELET-RICH-PLASMA INJECTIONS FOR THE TREATMENT OF RESISTANT TROCHANTERIC PAIN: PRELIMINARY RESULTS

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Introduction: Although Platelet-Rich-Plasma (PRP) injection has been used in many tendinopathies and inflammatory conditions, there is a lack of studies in treating trochanteric pain/bursitis. We examined whether PRP improves the symptoms of resistant trochanteric pain and evaluated its effects in relation to quality of life and daily activities. **Methods:** We carried out a prospective study of 27 patients with lateral hip pain, resistant to steroid therapy and physiotherapy. Pain score (0-10), EQ-5D Health Domain, Utility and VAS scores, Hip Disability and Osteoarthritis Outcome Score (HOOS) were recorded pre and post PRP injection. All patients had 1 or 2 steroid injections previously under ultrasound guidance, and re-presented with recurrence of trochanteric pain. All patients were assessed pre-PRP. **Results:** Data of 25 patients were complete with 2 lost to follow-up. The mean age was 59 (23-84). The male to female ratio was 3:22. Mean BMI score was 26 (20-35). The duration of symptoms ranged from 3-240 months. 80% of patients reported moderate severity of symptoms, while 20% as severe. Pain scores were halved at the final follow-up. Most of the patients (72%) had a successful outcome (excellent/good/satisfactory), while 7 patients (28%) had a poor outcome. Both EQ-5D Utility and EQ-5D VAS scores had improved after the PRP injection. HOOS scores increased significantly in all group after treatment. **Discussion:** In our preliminary findings, the use of PRP for resistant trochanteric pain has shown promising results and good outcome in both subjective and objective scoring. Further larger studies and longer follow-up is needed to determine this modality as a cost-effective way to treat resistant trochanteric pain.

Date: 2012-11-28
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Time: 17:00 - 18:30
Room: Dubai A+B

Abstract no.: 30886

TREATMENT OF CHARCOT NEURO-OSTEO-ARTHROPATHY OF THE ANKLE JOINT USING BIFOCAL ILIZAROV ANKLE ARTHRODESIS

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Charcot neuro-osteo-arthropathy of the ankle joint is a disastrous complication of uncontrolled diabetes mellitus. Ilizarov bifocal ankle arthrodesis can help such patients by correction of the deformity, achieving a stable ankle arthrodesis, healing of skin ulcerations, and, correction of limb length discrepancy. The aim of this work was to evaluate the results of treatment of charcot neuro-osteo-arthropathy using bifocal Ilizarov ankle arthrodesis. Patients and methods: This study included seven patients with charcot neuro-osteo-arthropathy of the ankle joint. All patients had fixed ankle deformities. Six patients had massive bone loss. Four patients had large skin ulcers. Informed consent was taken from all patients. Results: All patients had successful ankle fusion, correction of limb length discrepancy, correction of the deformity, and healing of the skin ulcers. All patients had pin tract infection at some stage during treatment. Pin tract infection was severe in one patient causing recurrent abscess formation in the wires of the proximal block of fixation. This required premature frame removal before complete consolidation of the regenerate. The patient was put in plaster of Paris until full consolidation was achieved. Conclusion: Ilizarov bifocal ankle arthrodesis is a reliable method for the treatment of the difficult cases of charcot neuro-osteo-arthropathy with fixed deformities, extensive bone loss, skin ulcerations and limb length discrepancy

Date: 2012-11-28
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Room: Dubai A+B

Abstract no.: 33160

THE EFFECTIVENESS OF HYALURONIC ACID INTRA-ARTICULAR INJECTIONS IN KNEE OSTEOARTHRITIS. A PROSPECTIVE OBSERVATIONAL STUDY

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Introduction: Intra-articular hyaluronic acid injections are commonly used in the management of knee osteoarthritis. However, the evidence on its effectiveness is divided, with many trials suggesting that it has good results while others suggest that it is ineffective. Even more controversy exists on the duration of its effectiveness. **Aim:** This prospective observational study aims to assess the effectiveness of hyaluronic acid injections in managing knee pain and to assess its duration. **Methods:** All patients scheduled to receive a Hyaluronic acid injection in our hospital between the months of June to August 2011 were invited to participate in the study. The patients who consented to participate were assessed at baseline for knee pain using visual analogue scores and for function using the Oxford knee score. They were then contacted at 6 weeks and 6 months to complete the same questionnaires. **Results:** 130 patients were invited to participate. 92 consented to participate. At 6 weeks there was a highly statistically significant improvement both for pain and for function. Despite this, however, 50% of the participants did not think that the injections had helped. At 6 months more than 50% of the participants had received another intervention either in the form of further injections or surgery. **Conclusion:** Hyaluronic acid injections can be helpful in managing knee osteoarthritis but their effectiveness is doubtful at 6 months post administration.

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Session: Miscellaneous: Rheumatology

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 32840

COMPARISON OF MOBILE AND FIXED BEARING TOTAL KNEE REPLACEMENTS IN RHEUMATOID ARTHRITIS

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The study aimed to compare the short to medium term results of fixed and mobile bearing total knee replacements in patients with rheumatoid arthritis. All TKRs performed in RA patients by a single firm over a four year period were included in the study. Data was collected prospectively and included demographic data, pre operative and yearly outcome measures including the Oxford and American Knee Surgery Society (AKSS) scores and revision rates. A total of 50 patients were operated over the period with 24 in the mobile bearing and 26 in the fixed bearing group. The average follow period was 46 (range 12-74) months for the mobile bearing group and 45 (range 12-74) months for the fixed bearing group. One patient in the mobile bearing cohort and two in the fixed bearing cohort required revision surgery. Excluding revisions, patients lost to follow up and deaths, there were 19 patients each in the two cohorts for analysis. There were no differences between the two cohorts with regard to demographic data, pre operative range of movement or function, duration of follow-up or revision rate. Post operatively apart for a marginally significant improvement in walking time at year five for the mobile bearing cohort, there was no significant difference between the two with respect to night pain, walking pain, pain score, flexion deformity, range of movement, Oxford score or AKSS score. There is no difference in functional outcome between mobile and fixed bearing TKRs in RA patients on short to medium term follow-up.

Date: 2012-11-28

Session: Miscellaneous: Rheumatology

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 32675

ELECTIVE ORTHOPEDIC SURGERY FOR SEVERAL HEMOPHILIA PATIENTS: FIRST RESULTS

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As a first result of our commencing program of elective orthopedic surgery for patients in hemophilia, we have performed 35 operations on 30 patients; 2 of these patients have developed inhibitor factor. The majority have been knee synovectomy (17 cases). The patients have a chronic synovitis, and recurrent haemarthroses. They fell into radiographic classification in groups 3 and 4 with. We have performed 10 knees replacements, associated with ankle arthrodesis (2 cases), and with synovectomy (2 cases). All these knees are stiff. We also performed 4 operations on 3 patients for sequels of muscle hematomas. We work closely in collaboration with our haematologists and our physiotherapists. Whenever possible we use regional anaesthesia in nine patients, using ultrasound to identify the peripheral nerves and have found that peripheral nerve blocks are beneficial in the post-operative rehabilitation. As a result of our study, we had 6 postoperative hemarthrosis (4 post synovectomy, 2 post knee replacement), one case of skin necrosis. The average of the follow-up for synovectomy is 12 months, and have a good evolution of the haemophilia rating scale. For knee replacement the follow-up is short, and according to IKS score are rated good, but functional score is just medium because of polyarticular damage. The improved mobility is modest. All the studies show that the best indication of Synovectomy is at the first's stage of arthropathy to preserve joint from deterioration. Our study shows also that the synovectomy in young children with joint damage gives a real amelioration of the function.

Date: 2012-11-28

Session: Tumours: Reconstructions

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 32057

**OUR EXPERIENCE REGARDING MODULAR PROSTHESIS
RECONSTRUCTION IN ORTHOPAEDIC ONCOLOGIC SURGERY –
SHORT-TERM RESULTS**

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Introduction: The osseous knee represents a common site for primary malignant tumours. The modern treatment management based on resection-prosthetic reconstruction is based on a demanded and difficult surgery, but crowned with spectacular results for the patient by conserving the affected leg. Paper Goal: Evaluation of short term results of tumoral resection and modular prosthesis reconstruction. Material and Method: In “Foişor” Orthopaedics Clinical Hospital, between November 2009 and June 2011, there were retrospectively identified 15 patients who benefited from tumoral resection and prosthetic reconstruction. We analysed both the complications and the functional outcome (rMSTS Score), translated in socio-professional reintegration. Results: From all the cases, just one was considered failure – periprosthetic infection. On the series studied, the complication rates of this oncologic conservative orthopaedic procedure were quiet important (21,43% - pareză temporary external popliteal sciatic nerve paresis; 14,29% - periprosthetic fractures; 7,14% - dislocation; 7,14% - infection), but within the interval cited by the specialized literature. Functional evaluation of the operated patients was made on the base of rMSTS and has indicated the possibility to carry out 75,44% of the normal activities. Conclusions: Patients’ functional recovery and their social-professional insertion are significantly better when keeping the endoprosthetic limb as compared to amputation and use of exoprosthesis. The weak point of the study is the short term follow-up, but long term reanalysis will be done. The prosthesis survival and the evaluation of polyethylene wear should be carried out on a longer period of time. Keywords: primary malignant bone tumours, tumoral resection-endoprosthetic reconstruction

Date: 2012-11-28

Session: Tumours: Reconstructions

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 31963

LONG-TERM RESULTS OF KOTZ-TYPE ENDOPROSTHESES IN PATIENTS WITH OSTEOSARCOMA

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Introduction: We report surgical results and complications of modular endoprostheses in patients with extremity osteosarcoma. Methods: 247 patients with extremity osteosarcoma have received a modular endoprosthesis for reconstruction after wide tumour resection (143 male, 58%; 104 female, 42%; mean age, 22 years; range, 7-73; median, 18; mean follow-up 86 months; range, 1-342; median, 48). Tumours involved the femur (146; 59%), tibia (76; 31%) and humerus (25; 10%), including 222 (90%) conventional and 25 (10%) other sub-types with metastases in 34 (14%). There were 110 (45%) reconstructions of the distal femur; 45 (18%) of the proximal tibia; 31 (13%) combined and 61 (25%) others. Results: 64 patients died throughout follow-up; the 5-year/10-year overall survival and metastasis-free survival were 72%/70% and 70%/69%; respectively. 122 patients (49%) suffered from complications: 67 (27%) required multiple revisions. 38 revisions (15%) were performed for soft tissue related complications (type 1); 37 (15%) for aseptic loosening (type 2); 64 (26%) for structural failures (type 3); 49 (20%) for infection (type 4) and 6 (2%) for local recurrence (type 5). The respective 5-year/10-year survival rates were 84%/81% (type 1); 87%/74% (type 2); 77%/50% (type 3); 81%/77% (type 4) and 97%/96% (type 5). Conclusions: Modular endoprosthetic reconstructions have a high revision rate, however, provide safe tumour control. Main causes for revision are structural failures and infection.

Date: 2012-11-28

Session: Tumours: Reconstructions

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 31152

LIMB RECONSTRUCTION AFTER WIDE RESECTION OF PRIMARY OSTEOSARCOMA OF BONE COMPARATIVE STUDY INTERMEDIATE FOLLOW UP

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Osteosarcoma is the most common primary malignant bone sarcoma. Limb salvage surgery is the main line of surgical treatment followed by either endoprosthetic or biological reconstruction. Patients and methods: This work included 18 patients, nine females, and 9 patients were males. Age ranged from 12 to 55 years with mean of (18 years). 9 cases had the disease in the distal femur, 4 cases had proximal tibial lesions, 2 cases had proximal humeral lesion and 3 cases had proximal femoral lesion. All patients were successfully treated by limb salvage surgery but reconstruction was done by endoprostheses in 11 patients and by biological reconstruction using autogenous vascularized fibular graft with or without use of the tumor segment after recycling. Follow up period ranged from 24 to 110 months with mean of 40 months. Results: The overall functional outcome was 76% according to the musculoskeletal tumor society score with range from 55% to 100%. Cases who were reconstructed by endoprostheses gave significantly better functional outcome than those treated by biological methods. Also longer follow up gave better results. 3 cases died of disease in the second year of follow up. Local recurrence occurred in two. Conclusion: Endoprostheses is the preferable method of limb reconstruction. Biological reconstruction is an option in certain situations.

Date: 2012-11-28

Session: Tumours: Reconstructions

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 31028

MASSIVE RESECTION OF DIAPHYSEAL PRIMARY MALIGNANT BONE TUMORS

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Introduction: Several methods of reconstruction have been used after resection of an intercalary malignant bone tumor such as the use of allografts, autografts, reimplantation of the bone tumour segment after being treated and intercalary endoprosthesis. Patients: This study included ten patients. 2 were males, 8 females. Age ranged from 7 to 55 years (mean 21 years). 2 cases were Ewing sarcoma, one chondrosarcoma and 7 cases were osteosarcomas. 5 cases were tibial and 5 were femoral tumours. Methods: Wide local resection was successful in all cases and reconstruction was done by reimplantation of the tumour segment after thermal treatment using pasteurization technique. Fixation was done by either intramedullary nail or a plate or both. Follow up ranged from 10 to 60 months (mean 23.6 months). Results: The reimplanted graft was united in 5 cases in a mean time of 6 months ranging from (3 to 10 months). Delayed union or non union in 3 cases. Soft tissue problems in two cases, one of them ended in above knee amputation due to infection. 2 patients died; one due to complications of chemotherapy after 10 months follow up and the other due to lung metastasis after 25 months follow up. One case of local recurrence. The mean musculoskeletal society functional score was 61.5%. Conclusions: Reimplantation of the tumour segment after pasteurization is a safe method of limb reconstruction after resection of intercalary malignant bone tumor provided that the tumour is not an osteolytic lesion.

Date: 2012-11-28

Session: Tumours: Reconstructions

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Room: Dubai C+D

Abstract no.: 30865

MODULAR MEGAPROSTHESIS FOR PROXIMAL FEMORAL TUMORS

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Introduction: Limb salvage surgery is the preferred treatment for proximal femoral tumors. The use of modular prosthesis following resection of the tumor is the preferred method, a procedure that is technically demanding. Objectives: The resection of tumor at the level of proximal femur results in loss of abductors and other musculature necessary for hip stability. This often leads to a higher instability rate. Hip dislocation is a recognized problem after the use of megaprosthesis, with rates of dislocation varying from 1.7% to around 28%. Methods: Between March 2003 and March 2008, fifteen patients had resection of the proximal femoral tumor and implantation of a modular megaprosthesis, using a bipolar acetabular cup. There were seven women and eight men, with a mean age of 37 (18-68) years. The diagnoses were osteosarcoma (2), chondrosarcoma (8), MFH (2) and GCT (3). All patients had a complete tumor workup prior to surgery that included routine blood work, bone scan, CT of the chest, and MRI of the femur. All patients had an open biopsy. They were given preoperative radiotherapy and chemotherapy as required. Results: The mean follow-up was 2.7 (range 5 months- 5 Ys) years. Two patients died of causes not related to the prosthesis. The postoperative Musculoskeletal Tumor Society score (MSTS) score was 19 (range 12-26) for the remaining 13 patients. There were one aseptic loosening, No infections, and No local recurrence. Conclusion: Proximal femoral modular megaprosthesis is a good option for reconstruction after resection of proximal femoral tumours.

Date: 2012-11-28

Session: Tumours: Reconstructions

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 32890

SILVER SURFACE-MODIFIED ENDOPROSTHESES USED IN THE PREVENTION AND ERADICATION OF INFECTION IN ONCOLOGY AND ARTHROPLASTY PATIENTS

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Introduction: Patients requiring reconstructions for bone tumours and infected endoprostheses are at high risk for developing periprosthetic infection (PPI). To address this problem we surface-modified our endoprostheses with silver, which is known to have bactericidal properties. The purpose of this study was to assess the effectiveness of silver in the prevention and treatment of PPI in oncology and arthroplasty patients. Methods: We retrospectively reviewed 51 patients who had limb salvage surgery with a silver surface-modified implant. 2 patients died of metastatic disease leaving 49 for review with a mean age of 47.5 years and mean follow-up of 13.8 months. Results: We implanted 50 silver endoprostheses in 49 patients. 43 patients were infection-free at last follow-up, giving a success rate of 88%. We performed 9 primary reconstructions, 30 single-stage revisions and 11 two-stage revisions. 27 were oncology cases and 23 were infected or failed arthroplasty cases. There was 1 infection in the primary reconstructions, giving an infection rate of 11% (1/9). The remaining 18 oncology cases were revisions of which 15 were infected cases. The infection cure rate for these cases was 80% (12/15). In the failed arthroplasty group, 21 of 23 revisions were for infection. The mean number of previous revisions for infection for these cases was 2.3 (1 to 8). The infection cure rate in this group was 90% (19/21). Discussion: Silver surface-modification of titanium endoprostheses gives a success rate of 88% when using infection as the end point. Our results indicate that silver is excellent at both preventing and eradicating existing PPI.

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Abstract no.: 32164

IMPROVEMENTS IN THE COMPUTER-AIDED HEMIPELVIC PROSTHESIS FOR PELVIC TUMOR

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Limb-sparing surgery with hemipelvic megaprosthesis replacement is now accepted as standard treatment for pelvic malignant tumour. However, many surgical challenges remain in the procedure, such as how to accurately determine the tumour extent and surgical resection area preoperatively, how to effectively connect the pelvic prosthesis with sacrum and lumbar spine in case one side ilium is completely resected. With the digital imaging technology, combining X-ray, unenhanced and enhanced MRI examinations, the boundaries of tumour are determined. Then, together with CT Viewer Volume 4D imaging technology, the 3D images of the primary tumour boundary and resection range can finally be obtained, thus the simulate resection on patient's pelvic model can be prepared by RPT. Then on the remaining model, the design, manufacture and simulate installation of customized prosthesis could be processed. In the case of completely resected ilium, that is, sacroiliac joints are completely disintegrated, the connection between the prosthesis and the residual pelvic becomes the key factor to ensure the stability. For a long time, the fixation of pelvic prosthesis and sacrum usually relies on screws, and the large and repeated shear and tensile stress on the interface can lead to the loosening or displacement of prosthesis. A hook-like brace on the prosthesis was designed and placed under the sacrum, which turns shear or tensile stress into compressive stress between prosthesis and sacrum. And we also introduced the locking screw system to the sacrum and pedicle screw system to L4, 5 vertebrae to improve the primary stability of prosthesis.

Date: 2012-11-28

Session: Tumours: Reconstructions

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 32786

SURGICAL TREATMENT OF THE DISTAL RADIUS GCT: 12 CASES

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Introduction: It's an aggressive lytic tumor, leading to fractures, soft tissues invasion, and "benign" pulmonary metastasis. Patients and methods: Twelve patients, over 15 year's period, 34 years (25-56), and 7 men for 5 women. The average duration time was 13 months. Two patients consulted after a recurrence. According to the Campanacci radiological classification, we found 2 stage 1, 8 stage 2 and 2 stage 3. All tumors were benign. The therapeutic methods are: - Curettage and bone graft: 4 times - Curettage and cementage: 2 times - Resection and reconstruction by free fibula and radio carpal arthrodesis in one stage surgery: 5 times - Resection, cement spacer and reconstruction by fibula in two stage surgery: 1 time. Results: With a follow of 6 years (8 years- 13 months), 2 curettage and bone graft presented a recurrence and were treated by curettage and cementage. The function of the hand was acceptable. Discussion: They are the most frequent tumors to the distal radius. The treatment of choice is the resection and the arthrodesis between the lower end of the radius and the proximal row of the wrist with an osseous graft interposed (fibula, tibia, and iliac crest). Conclusion: Often active and diffuse, in spite of the histological benignity, the GCT raises enormous surgical difficulties. This work brings back the possibility of making the resection with cement spacer and then differed reconstruction. A free non vascularized fibula of more than 10cm is able to consolidate.

Date: 2012-11-28

Session: Tumours: Reconstructions

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 31191

RECURRENCE IN GIANT CELL TUMOUR OF DISTAL END OF RADIUS AFTER RESECTION AND RECONSTRUCTION – AN ANALYSIS

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Background: Despite the bulk of literature available on the subject of resection and reconstructive procedures for the Giant Cell Tumour of the distal end of Radius, the papers analyzing the recurrences and the various factors responsible for it are scanty. Methods: Forty eight patients of aggressive GCT of distal end of Radius were treated by resection and reconstruction by various methods between 1986 and 2009. We retrospectively reviewed and analyzed the twelve patients showing the recurrences in the follow up and this constituted the study material for this study. Results: The recurrences were observed between 5 – 16 months. In four, there was definitive evidence of contamination by spillage of tumour tissue. In another four, biopsy site was not included along the excision of the tumour. In one case recurrence was noticed in the hand around the intramedullary nail. The pathological fracture/ broken cortex were observed in three. As MRI/CT scan facilities were not available during the initial years of our study, this was not included for analysis. In four, below elbow amputation and in another six, local excision of recurred tumour was done as an elective procedure. The other two refused to undergo any further surgery. Conclusion: The local recurrences are mainly due to non inclusion of biopsy site in excision. Spillage of tumour and contamination of surrounding tissues during the resection is yet another very important reason. One also needs to be extra careful when excising a tumour with broken cortex or pathological fracture.

Date: 2012-11-28

Session: Tumours: Reconstructions

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 30817

MUSCULOSKELETAL TUMORS OF PELVIC RING WITH ABDOMINAL MANIFESTATIONS

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Because of near proximity of pelvic bone with abdominal and urogenital viscera, sometimes the prominent manifestation of these tumours may be visceral symptoms and signs and the underlying bony tumour is not truly symptomatic. These symptoms and signs may mislead the treating physician and make delay in treatment of the pelvic bone tumour. In a period of 10 years, we had 24 pelvis tumour with prominent abdominal symptoms: 10 lower quadrant pain (6 right, 4 left), 4 disuria and frequency, 5 diarrhoea and tenesmus and 2 hydronephrosis and obstruction of urine and finally 3 flank pain. Among them, there were 3 unnecessary operations for appendicitis. 9 of them were aneurysmal bone cyst, 3 giant cell tumour, 3 multiple myeloma, 4 chondrosarcoma, 2 hyperparathyroidism and 3 hydatid cyst. So, with regard to these cases, a pure pelvic radiography may change the process of treatment.

Date: 2012-11-28

Session: Tumours: Surgical Treatments & Outcomes

Time: 17:00 - 18:30

Room: Dubai C+D

Abstract no.: 32754

RESULTS OF TREATMENT OF RECURRENT GCT: EXTENDED CURETTAGE COMPARED WITH WIDE EXCISION

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An analysis of 22 patients treated for recurrent GCT of appendicular bones was done, comparing their clinical presentation and treatment outcome (intralesional extended curettage or wide excision) in terms of recurrence and residual limb function. Fourteen patients (63.6%) were Campanacci grade II and 8 were grade III. Two treatment modalities were used for the recurrent lesion: Extended curettage (with/without bone grafting/cementing) was done for patients with Campanacci grade I and II tumours in whom at least 2 mm of subarticular bone was free of the tumor (10 patients, 45.5%), and wide excision and reconstruction with a prosthesis or arthrodesis was used for Campanacci grade III and those with articular involvement (10 patients, 45.5%). Other than these, two patients with encasement of neurovascular bundle of the limb needed amputation. Functional evaluation was done by Enneking's system at 6 months post-surgery. Average follow up period was 29 months (range 18 to 40 months). During follow up, 2 patients had a repeat recurrence (9.1%). Both had undergone curettage and bone grafting for the index recurrent lesion. Both subsequently underwent wide excision of this recurrence and were tumour-free till last follow-up (> 2 years). The average functional score of 20 patients was 88.8%; 91.0% for patients with extended curettage and 86.3% for patients with wide excision. Conclusion: Recurrent GCT can be treated in the same way as primary GCT, and extended curettage, where indicated, gives good functional results but with slight increase in recurrence rates.

Date: 2012-11-28

Session: Tumours: Surgical Treatments & Outcomes

Time: 17:00 - 18:30

Room: Dubai C+D

Abstract no.: 31238

GIANT CELL TUMOURS OF BONE – CORRELATION OF CLINICAL AND HISTOPATHOLOGICAL FEATURES TO OUTCOME POST-SURGICAL TREATMENT; A SINGLE INSTITUTION EXPERIENCE OF 359 CASES

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Introduction: Giant cell tumour (GCT) is one of the most controversial and discussed bone tumours. Biological behaviour can be unpredictable and there is currently no consensus as to the best treatment for these theoretically benign lesions. Surgical treatment options include intralesional excision or segmental resection. Curettage has a higher recurrence rate than resection but does preserve adjacent joint function. After curettage, the use of adjuvant therapies is still controversial. Aim: We evaluated (1) clinical and histopathological features of patients with GCT, (2) the recurrence rate and recurrence-free Kaplan-Meier survival function post-resection or curettage, (3) Musculoskeletal Tumour Society (MSTS) functional score (1993 version), and (4) complications after treatment. Methods: We conducted a retrospective review of 359 patients (males and females) with GCT of bone presenting to the Royal National Orthopaedic Hospital to evaluate oncological and functional results. Results: The patients were followed up for at least 12 months. The average age of the patients was 36.9 years (range 1-89 years). Tumours were treated with extensive curettage, local adjuvant therapy (e.g. phenol), cement reconstruction or wide resection +/- use of endoprostheses. The recurrence rates, Kaplan-Meier recurrence-free survival curves, and MSTS functional scores were recorded and correlated to the clinical and histopathological features of these tumours using statistical analysis. Conclusion: This is the largest reported series of giant cell tumours of bone to date and by correlating clinical and histopathological features to outcome post-treatment serves to elucidate the unpredictable behaviour of these tumours, evaluate current surgical treatment options and guide future therapeutic approaches.

Date: 2012-11-28

Session: Tumours: Surgical Treatments & Outcomes

Time: 17:00 - 18:30

Room: Dubai C+D

Abstract no.: 30864

EXTENDED CURETTAGE, BONE GRAFTING AND SPANNING EXTERNAL FIXATION FOR THE TREATMENT OF GIANT CELL TUMOR OF BONE AROUND THE KNEE

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Background: Treatment of juxta-articular giant cell tumor of bone around the knee remains a dilemma. Many authors recommend cementing, others grafting after extended curettage and others resect and replace by a modular prosthesis. Biological reconstruction remains the corner stone of our belief in treatment of GCT. Methods: A retrospective review was conducted of giant cell tumor around the knee treated between 1998 and 2008 using the technique of extended curettage through a large bone window ISP, followed by bone grafting and spanning external fixation. Fifteen patients with a mean follow-up time of 46 months (range, 24–120 months) were identified. Results: All 15 patients are continuously free of disease and there is no local recurrence. Functional evaluation was performed by ISOLS criteria. The average functional score was 90% (77–100%). None of the patients complained of pain and none of the patients demonstrated serious instability of the knee joint. All the patients showed union starting from 2 months after surgery with full consolidation 6 months after surgery. The fixator was removed at 5-12 months after surgery. Osteoarthritis of the knee joint was not seen in any of our patients. Five patients had intraarticular fracture of the distal femur at presentation, all healed eventually and did not affect the final results. No stress fracture was seen in any of the patients. Conclusion: Extended curettage, ISP bone grafting and spanning external fixation is a safe and effective procedure for the treatment of juxta articular giant cell tumor of bone around the knee.

Date: 2012-11-28

Session: Tumours: Surgical Treatments & Outcomes

Time: 17:00 - 18:30

Room: Dubai C+D

Abstract no.: 31902

OUTCOME OF INTRALESIONAL CURETTAGE FOR LOW-GRADE CHONDROSARCOMA OF LONG BONES

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Background: Different treatment strategies for low-grade chondrosarcomas are reported in the literature with variable outcomes. The aim of this study was to assess the oncological and functional outcomes associated with intralesional curettage and cementation of the lesion as a treatment strategy. Patients and methods: We performed a retrospective review of 39 consecutive patients with intramedullary low-grade chondrosarcoma of long bones treated by intralesional curettage and cementation at our institution between 1999 and 2005. Results: There were 10 males and 29 females with a mean age of 55.5 years (32e82), and a mean follow-up of 5.1 years. Local recurrence occurred in two patients (5%) within the first two years following index surgery. Both were treated by re-curettage and cementation of the resultant defects. A second local recurrence developed a year later in one of these two patients, for which a further curettage followed by local liquid nitrogen treatment was performed. Overall, there were no cases of post-operative complications or metastases. The patients were assessed using the Musculoskeletal Tumour Society scoring system (MSTS) to determine limb function. The average score achieved was 94% (79 -100%). Conclusion: Intralesional curettage is an effective treatment strategy for low-grade intramedullary chondrosarcoma of long bones, with excellent oncological and functional results. Careful case selection with stringent clinical and radiographic follow-up is recommended.

Date: 2012-11-28

Session: Tumours: Surgical Treatments & Outcomes

Time: 17:00 - 18:30

Room: Dubai C+D

Abstract no.: 31441

SOFT TISSUE SARCOMAS NEEDING BONE RESECTION

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Purpose: Soft tissue sarcomas may occur close to, but rarely invade into, the bone. Wide excision is essential for local control in such patients. Methods: Between 2003 and 2011, we diagnosed 156 patients with malignant soft tissue tumors by biopsy and examined them by preoperative MRI, CT, and/or bone scintigram. We performed surgery with bone resection in 25 patients (15 men and 10 women; 13-80 years) with soft tissue sarcomas; among them, 3 patients with actual tumor invasion into the bone had liposarcoma and 1 patient each had synovial sarcoma and alveolar soft-part sarcoma. The tumor sites were thigh (5), lower leg (5), finger (3), forearm (3), thoracic wall (5) (one inside), lumbo-iliac (3), and foot (1). Results: Histological examination indicated liposarcoma (7), leiomyosarcoma (5), synovial sarcoma (4), and myxofibrosarcoma (3). Mean follow-up period was 38.5 months. Clinical results indicated that 14 patients had continuous disease-free survival, 1 had no evident disease, 4 were alive with disease, and 6 died of disease. We performed amputations in 3 patients and excisions in 13. Bone reconstruction was performed by intraoperative implantation of an irradiated bone graft in 5 patients and using a mesh in the chest wall of 4 patients. Local recurrence was observed in 2 patients. 5-year overall survival rate was 63.3%. Conclusions: Local control in sarcomas can be improved by a preoperative plan and accurate surgery. When MRI reveals a sarcoma close to the bone, excessive excision may be required to ensure safety.

Date: 2012-11-28

Session: Tumours: Surgical Treatments & Outcomes

Time: 17:00 - 18:30

Room: Dubai C+D

Abstract no.: 30825

SURGICAL TREATMENT OF SKELETAL METASTATIC LESIONS IN 31 MELANOMA PATIENTS

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Background and purpose: The prognosis and post-operative outcome of patients surgically treated for skeletal metastases of malignant melanoma has not been well documented. The post operative survival is often short and the benefit of palliative surgery is therefore difficult to predict. The aim of the study was to identify factors related to overall patient survival and to evaluate the role of orthopedic surgery. Patients and methods: We assessed the re-operation rate and overall survival in a consecutive series of 31 patients surgically treated at a single institution for 34 metastatic lesions from 1987 through 2007. The patients were surgically treated for spinal cord compression (n=12) and metastatic destructions in a long bone (n=17), or other locations (n=5). Results: The median survival of the 31 patients after surgery was 2 months (range 0 – 40 months). The survival rate was 0.39 at 3 months and 0.13 at one year after surgery. There was significantly better postoperative survival among patients with a preoperative haemoglobin level > 115 mg/L (p = 0.003) and a perioperative lactate dehydrogenase level ≤ 8 µkat/L (p = 0.04). Four of 34 operations (0.12) lead to failures necessitating re-operation. Interpretation: Survival after surgical treatment of pathological fractures and paraparesis in patients with skeletal metastases of melanoma is very short. The presence of a solitary metastasis, a prolonged interval between diagnosis of primary melanoma and surgery for skeletal metastasis and normal levels of lactate dehydrogenase and hemoglobin seemed to have favorable prognostic impact.

Date: 2012-11-28

Session: Tumours: Surgical Treatments & Outcomes

Time: 17:00 - 18:30

Room: Dubai C+D

Abstract no.: 31698

SURGICAL TREATMENT OF LIMB DESMOID FIBROMAS: 16 CASES

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INTRODUCTION: Desmoid fibromas are infiltrating fibroblastic proliferations which do not give metastases not but which tend to recur. **PATIENTS AND METHODS:** We report 16 cases of limb desmoids fibromas, 11 women and 5 men from 14 to 42 years, without traumatic antecedents or of PAF, over 20 years period. The average duration time was 14 months. The clinical signs are dominated by compressive signs particularly in clavicle area. The localization was 10 times at the upper limb and 6 times than the lower limb. A constant characteristic in this series is the intimate relationship with the principal nerves of the members making the carcinological resection impossible. Thus, the resection was marginal in all the cases at least on a margin of the tumor, and in 3 cases part of the tumor was left in place to save the plexus brachial. There were no notable post-operative complications. Five of our patients received a hormonal treatment (Tamoxifene), and a patient received an external radiotherapy. **RESULTS:** The follow up was 5 years (1- 18 years). All the patients are in life. Only 8 patients are cured of their tumor with a passing of more than 5 years. **DISCUSSION:** The desmoids fibromas can occur in the abdominal wall, into intra-abdominal, seldom on the level of the members. The hormonal factors and the genetic factors are the principal found factors etiologic. The best treatment remains however surgical. In the inoperable cases, several medical treatments were proposed with getting in certain cases of tumoral stabilizations.

Date: 2012-11-28

Session: Tumours: Surgical Treatments & Outcomes

Time: 17:00 - 18:30

Room: Dubai C+D

Abstract no.: 31979

ARTHROSCOPIC RESECTION OF DORSAL WRIST GANGLION THROUGH A MODIFIED PORTAL

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Ganglions are the most common soft tissue tumours of hand. Resection by open method leaves a scar, causes more pain, wrist stiffness and weakness in grip strength. We performed arthroscopic resection of dorsal wrist ganglion through a modified portal. A total of 15 patients were enrolled in the study which included 12 women and three men with an average age of 23 years. A 2.7mm arthroscope was first placed in the 6R portal to examine the joint and exclude any concomitant pathology. The working portal was created directly through the cystic sac. A 2.9 mm full radius shaver was then introduced through this modified portal and resection of the ganglion cyst stalk done. The mean follow up was 24 months. Pain, grip strength, wrist motion, return to daily activities and return to work were assessed post operatively. Patients experienced significant increase in function, grip strength and decrease in pain within six weeks. No recurrence was seen in any patient. All patients recovered satisfactory motion and good relief from pain. To conclude arthroscopic ganglion cyst resection through this modified (intracystic) portal is a safe and efficacious option for the management of dorsal wrist ganglion.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty - Bilateral Minimal Invasive Positioning

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 31323

BILATERAL SEQUENTIAL TOTAL HIP REPLACEMENT WITH SINGLE ANAESTHESIA

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Introduction: To compared bilateral sequential total hip replacement under a single anaesthetic to bilateral staged total hip arthroplasty for bilateral hip arthritis. Method: From a prospective hip arthroplasty database we have identified 27 patients with 54 arthroplasties performed during the same hospital admission a mean of 10.2 days apart. A further 50 patients, undergoing 100 arthroplasties had procedures performed under a single anaesthetic. The two groups were comparable with respect to age, sex, height, weight, diagnosis, follow-up and surgical approach. Four different prosthetic implants were used in these patients. Functional data was collected prospectively and radiographic data analysis performed by a blinded observer. Results: The improvement of hip score at one year and at final follow-up did not differ significantly between the two groups. There was no difference in pain score, range of motion or functional outcome between the two groups. There was, however, a higher rate of postoperative dislocation, higher transfusion rate and increased length of stay in the short interval group as compared to the single anaesthetic group. There was no difference in radiologic outcome between the two groups. Conclusion: A short interval between hip arthroplasties may be detrimental due to increased rate of hip dislocation and the increased need for transfusion; furthermore there is a substantial increased length of stay in the short interval group. In patients with bilateral hip arthritis sequential procedures under a single anaesthetic may be preferable if general health status is appropriate.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty - Bilateral Minimal Invasive Positioning

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32166

BILATERAL THA IN PATIENTS WITH JRA: FASTER RECOVERY?

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Introduction: Hip joints are usually affected in patients with severe destructive juvenile rheumatoid arthritis (JRA). In patients with severe hip disease, total hip arthroplasty (THA) is the only viable option. Materials: We performed simultaneous bilateral total hip arthroplasty in 7 patients (14 hips) with JRA. The mean age of patients at the time of surgery was 18 (15-24). There were 5 females and two male. All patients underwent THA through direct anterior approach in supine position. Both acetabular and femoral component were cementless. All patients get off the bed on the same day of surgery. Results: At average follow-up of 16 months, all components were stable both clinically and radiographically. The Harris hip score improved from 35 preoperatively to 85 postoperatively on average ($P < 0.001$). SF-36 Showed significant improvement and WOMAC score decreased significantly ($P < 0.05$). All patients will be able to walk without walking aid at a mean time of 3.5 weeks postoperative. No patients require blood transfusion. Conclusion: Bilateral THA through direct anterior approach is a good option for patients with JRA and bilateral hip involvement. This approach will expedite patients' rehabilitation and improvement in quality of life in trade of minimal risk taking.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty - Bilateral Minimal Invasive Positioning

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32987

MINIMAL-INVASIVE TOTAL HIP ARTHROPLASTY WITH TRIAL HEAD NAVIGATION AND STEM-FIRST TECHNIQUE: RATIONAL AND CLINICAL RESULTS

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Introduction: Dislocation is still one of the major complications in total hip arthroplasty. Among other factors, it is important to maximize the intended range of movement (iROM) in order to reduce the risk for prosthetic impingement, edge loading and squeaking. Therefore, both components should be positioned according to the safe-zone for correct combined version and combined inclination. This study shows how to control the combined orientation of both components intraoperatively using trial head navigation and minimal-invasive stem-first technique. Material and Methods: More than 500 minimal-invasive total hip arthroplasties have been performed from 2007 to 2011. In 132 cases the trial head navigation was applied allowing accurate control of combined version and inclination intraoperatively according to the specific safe-zone of the prosthesis system. All patients were positioned supine on an orthopedic table and a minimal-invasive direct anterior approach was used. Leg length was measured in the operative situs additionally. Results: No dislocation or subluxation and no squeaking or impingement did occur in the trial head navigation group including those patients receiving a ceramic-on-ceramic articulation. Cup orientation was in the safe-zone in 96% of the cases. Leg length did not differ more than +/- 4mm. Conclusion: Applying direct minimal-invasive approach and using stem-first technique with trial head navigation yields excellent clinical results and do assist the surgeon intraoperatively in aligning the cup and the stem in their correct combined orientation. It helps to greatly reduce the rate of dislocations and to get an optimal range of movement especially in young patients.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty - Bilateral Minimal Invasive Positioning

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32183

DIRECT ANTERIOR APPROACH: BETTER OUTCOME BUT STEEP LEARNING CURVE

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Introduction: There are many claimed advantages for total hip arthroplasty via the direct anterior (DA) approach, including quicker recovery and return to unassisted ambulation, along with reduced soft tissue damage, surgery time, pain, and risk of dislocation with early elimination of hip precautions. However, steep learning curve could be considered as a disadvantage for this approach. In this paper, we present our results of our first 101 patients underwent THA with DA approach. Materials: 110 THA was performed in 101 patients. Nine patients received simultaneous bilateral THA. There were 48 men and 53 women in this cohort. The mean age of patients at the time of surgery was 45.6 years (15 - 80). The mean BMI of our patients was 28.4 kg/cm². All patients were followed prospectively for any complications. The mean incision time was 58 minutes and no patient required blood transfusion. Results: The average follow up for this cohort was 14 months. Harris hip score and SF-36 were improved significantly and the WOMAC was significantly lower in postoperative period. However, we had 8 (7%) early complications including 2 dislocation (1.8%), 2 infections (1.8%), 2 greater trochanteric fracture (1.8%) and two stem penetration. All of these complications occur in first 50 cases. Conclusion: We conclude that DA approach is associated with better early outcome after THA in terms of faster rehabilitation; however, surgeons should notice its steep learning. Surgeons need to be appropriately trained through visitation and cadaveric course before doing this approach to minimize potential complications.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty - Bilateral Minimal Invasive Positioning

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32925

RISK FACTORS FOR ILIOPSOAS IMPINGEMENT FOLLOWING TOTAL HIP ARTHROPLASTY

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Introduction: Iliopsoas impingement is an important complication to recognize following THA, as it has a substantial effect on quality of life, and may require revision surgery to resolve. Understanding risk factors that may predispose patients to iliopsoas impingement will help to minimize postoperative risk. Methods: 4,872 cases of primary and revision THA were performed at our institution between January 2007 and December 2010. 51 patients were diagnosed with iliopsoas bursitis, tendinosis, and/or tendinitis using ultrasound. Each patient with iliopsoas pathology was matched to three controls without iliopsoas pathology that underwent THA, by date of surgery and Charlson Comorbidity Index (CCI). Patient charts were reviewed for demographic variables and intraoperative variables. Results: Average age, BMI, and gender distribution in the iliopsoas pathology group was not significantly different between the two groups. In the pathologic group and controls, cup size was an average of 53.1 mm and 53.4 mm respectively and head size an average of 32.5 mm and 31.7 mm respectively. Decreased head to cup ratio was a risk factor for iliopsoas impingement; an average of 1.6 in the pathologic group compared to 1.7 in the control group. Only three hips in the study were replaced with metal on metal components, two of which developed iliopsoas tendinitis. Conclusion: Iliopsoas impingement is a common cause of groin pain following THA. Our study suggests that large implant head size is a risk factor for iliopsoas impingement. Particularly, oversized implant head size compared to acetabular cup size may predispose patients to developing this complication.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty - Bilateral Minimal Invasive Positioning

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 30933

MUSCLE DAMAGE IN RELATION TO THE SURGICAL APPROACH FOR PRIMARY TOTAL HIP REPLACEMENT

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Introduction: As a result of the lack of objective evidence of fewer muscle and tendon defects, controversy still remains as to whether minimally invasive total hip arthroplasty truly minimizes muscle and tendon damage. Therefore, the objective was to compare the influence of the surgical approach on abductor muscle trauma and to analyze the relevance to postoperative pain and functional recovery. Methods: 50 patients with primary hip arthritis were prospectively included in the study protocol. Patients underwent cementless unilateral total hip arthroplasty either through a minimally invasive anterolateral approach or a standard transgluteal approach. Patients were evaluated clinically and underwent MR imaging preoperatively and at 3 and 12 months postoperatively. Clinical assessment contained the Harris Hip Score, a pain score, as well as a satisfaction score. Results: Muscle and tendon damage occurred in both groups, but significantly more gluteus medius tendon defects and muscle atrophy in the anterior part of the gluteus medius were found in patients with the transgluteal lateral approach. The clinical outcome was also poorer compared to the minimally invasive anterolateral group. No differences in muscle and tendon damage were found for the gluteus minimus muscle. Conclusions: Abductor muscle and tendon damage occurred in both approaches, but the gluteus medius muscle can be spared more successfully via the minimally invasive anterolateral approach, accompanied by a better clinical outcome. Going through the intermuscular plane, without any detachment or dissection of muscle and tendons, truly minimizes perioperative soft tissue trauma.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty - Bilateral Minimal Invasive Positioning

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 31161

ACCURACY AND PRECISION OF VERSION ANGLE MEASUREMENTS OF THE ACETABULAR COMPONENT AFTER TOTAL HIP ARTHROPLASTY

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Introduction: The orientation of the acetabular component after total hip arthroplasty (THA) has been expressed as a combination of two angles, inclination angle (IA) and version angle (VA). VA can be measured on an AP radiograph of the pelvis, or on a cross-table lateral radiograph of the hip. The purpose of this study is to compare two methods of VA measurements in terms of accuracy and precision. Methods: Sixty-six hips after THA entered into the study. IA and VA were measured on CT of the pelvis using functional pelvic plane as reference, and were converted to values in radiological definition. VA was measured on an AP radiograph of the pelvis (VA-AP), and on a cross-table lateral radiograph of the hip (VA-CL). The differences between measurements on radiographs and those on CT were defined as errors. The statistical analysis included Student's t-test to compare the error means (accuracy), and Bartlett's test to compare the error variances (precision). We regarded $p < 0.05$ as statistically significant. Results: Mean \pm SD of IA was $42.7 \pm 5.7^\circ$, and VA was $18.2 \pm 7.8^\circ$ on CT. Mean error of VA-AP was $-0.57 \pm 3.1^\circ$, and VA-CL was $2.8 \pm 4.1^\circ$. Mean VA-AP error was significantly smaller than VA-CL error ($p < 0.0001$), and VA-AP variance was significantly smaller than VA-CL ($p = 0.04$). We recommend VA measurements on an AP radiograph of the pelvis rather than a cross-table lateral radiograph of the hip from the aspect of measurement accuracy and precision.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty - Bilateral Minimal Invasive Positioning

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32471

PATIENT-SPECIFIC MUSCULOSKELETAL MODELS CAN PREDICT THE IMPACT OF ACETABULAR RECONSTRUCTION ON HIP MUSCLE LENGTH

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Introduction: Reconstructing massive acetabular deficiencies has far-reaching consequences for hip muscles. Large hip joint centre (HJC) displacements may lengthen muscles beyond physiological limits. Predictive musculoskeletal models provide a promising tool to determine the impact of acetabular reconstruction on hip muscles. In this study, patient-specific musculoskeletal models were developed for seven patients with complex acetabular defects (Paprosky IIIB) who received custom-made acetabular implants. These models were used to quantify muscle length changes after implantation and to assess whether acetabular reconstruction can remedy muscle length asymmetry. **Methods:** Using semi-automated computerised techniques, individualised musculoskeletal models were built from pre-operative CT scans of seven patients, taking their weight and height into account. To model the post-operative situation, the HJC was modified to match the implant design. A personalised walking pattern was calculated for each patient. This motion was imposed on the musculoskeletal model and used to simulate muscle lengths during gait in the pre- and postoperative situation. **Results:** Pre-operatively, most muscles on the pathological side were shorter than their counterparts on the healthy (non-implanted) side, with the gluteus minimus showing deficits up to 40% (mean 21%). Post-operatively, these differences decreased markedly. The length deficit for the gluteus minimus decreased below 15% (mean 6%). Implant placement changed muscle lengths from -59% (quadratus femoris; mean -27%) to +49% (gluteus minimus; mean +25%). **Conclusion:** Individualized musculoskeletal models provide a quantitative tool to predict the consequences of acetabular reconstruction on hip muscle lengths. Acetabular reconstruction can reduce muscle length asymmetry while causing acceptable muscle length changes.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty Infection - Ankylosed

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 32384

EFFICACY OF ANTIBIOTIC LOADED SPACERS IN TWO STAGE HIP REVISIONS

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Two stage revisions are the treatment of choice for infected hip arthroplasties, in our clinic. The results of 12 hips of 10 patients that were treated by this method are being discussed. In 8 patients, the spacers were produced intraoperatively by adding 4 grams Vancomycin to 80 grams of high viscosity cement. The other 4 hips were treated with commercially manufactured spacers loaded with 4 grams of Gentamycin. The second stage was performed after 3 months. During this time, two spacers dislocated, one fractured and a massive cavitory defect formed in the acetabulum. The cultures obtained during second stage surgery showed no signs of infection. The mean follow-up after the second stage operation was 18 months. Handmade and commercially produced antibiotic loaded spacers have the advantage of aiding in infection therapy, maintaining limb length, stability and joint motion.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty Infection - Ankylosed

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31809

SUCCESSFUL OUTCOMES IN TEMPORARY AND DEFINITIVE MANAGEMENT OF INFECTED PERIPROSTHETIC FEMORAL FRACTURES USING INTERLOCKING PROSTHESES

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Infected periprosthetic fractures around total hip arthroplasties are an increasingly common and challenging problem. This prospective study reviews the experience of tertiary referral units in managing these fractures using interlocking long-stem femoral prostheses either as temporary functional spacers or as definitive implants. 21 patients were managed at 2 tertiary referral units between 2000 and 2011. Similar institutional protocols for diagnosis and management were followed. Aspiration and biopsy of periprosthetic tissue supplemented haematological test to confirm infection. 12 cases used the Cannulock uncoated stem, and 5 the Kent hip prosthesis. Allograft struts were used in patients with deficient bone stock. Follow-up for the series was 38 months(range 36-84 months). 11 patients underwent definitive revision within 6.8 months(range 6-8 months; SD, 2.2 months). 6 cases used an extensively porous-coated stem and 4 cases a tapered distally fixed cementless stem was used. There were no reinfections after the second stage revisions. 2 asymptomatic patients with persistently raised inflammatory markers declined further staged surgery and are managed in the community on oral antibiotics. Satisfactory outcome was noted in all cases. In 11 cases, revision to a definitive stem occurred after successful control of infection and fracture union. The average postoperative Harris Hip score was 83(range 79-89). All patients returned to their low to moderate premorbid functional state after discharge. The use of interlocking stems offers an appealing solution for a complex problem and avoids the complications associated with resection of the entire femur or the use of large quantities of bone cement.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty Infection - Ankylosed

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 32030

PERI-PROSTHETIC JOINT INFECTION – A DIAGNOSTIC AND TREATMENT HOSPITAL ANALYSIS

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Peri-prosthetic joint infection is a major and severe complication after joint replacement. Although it occurs in a small percentage (1-3%) of patients undertaking arthroplasty it results in substantial morbidity and a decline of the final functional outcome. Paper goal: The aim of the present article is to retrospectively analyse and evaluate the rate, diagnosis procedures and treatment management and results of the periprosthetic joint infections in our hospital. Material and method: Between 2007 and 2010, in the Clinical Hospital of Orthopaedics and Traumatology “Foisor”, we identified a total of 96 periprosthetic joint infection episodes in 89 patients. We analysed the cases from diagnostic and treatment management point of view and withdraw conclusions reported to the actual periprosthetic joint infection guideline. Results: The overall prevalence rate of periprosthetic joint infection after THR and TKR together was 2.87%, but however higher in TKR (3.30%) than in THR (2.70%). The diagnostic protocol led to a specific antibiogram in 90% of the cases. Except early infections cases, the treatment attitude was “two-stage” revision for late, haematogenous or intraoperative infection, with a success rate of 87.50%. Conclusions: The “two stage” exchange revision arthroplasty seems to be a successful procedure in the treatment of periprosthetic joint infection and therefore we recommend this surgical attitude in similar cases of infection. As final remark, early recognition and proper management of these infections is important, not only from a medico-legal standpoint, but also from the significant implications of this pathologic entity upon public health and economic costs.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty Infection - Ankylosed

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 32119

MRSA & MSSA SCREENING FOR ELECTIVE LOWER LIMB ARTHROPLASTY

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INTRODUCTION: MRSA colonisation increases the risk of a surgical site infection (SSI). Screening identifies such patients. Eradication treatment before surgery decreases the risk of infection. This study determines whether receiving effective eradication therapy decreases the risk of infection in a patient screening positive for MRSA to that of someone screening negative. **METHODS:** 1047 patients undergoing elective total knee or hip replacement had pre-operative screening for MRSA and MSSA using nasal and perineum swabs. If MRSA positive they undertook eradication therapy, only advancing to surgery once a negative sample was provided. Those screening positive for MSSA did not receive eradication treatment. Surgical site infections were recorded and the rate of infection, relative risk and odds ratio were calculated. **RESULTS:** Overall 24 (2.26%) SSIs were observed post-operatively with 15 infections (1.78%) in 851 patients screening negative. Twenty-five patients (2.4%) screened positive for MRSA; 2 (8%) suffered a post-operative infection (Relative Risk 4.49, Odds Ratio 4.79). 181 patients (17.3%) screened positive for MSSA with 7 (3.9%) suffering an SSI (Relative Risk 2.12, Odds Ratio 2.22). The group screening positive for MRSA was at a statistically significantly higher risk of suffering a post-operative infection ($p=0.03$). **CONCLUSION:** Screening positive for MRSA carries a four times higher risk of SSI than screening negative despite of receiving suitable eradication therapy. A second group of patients screening positive for MSSA are also at a higher risk of post-operative infection but further work is required to establish if eradication therapy would decrease the SSI rate amongst this group.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty Infection - Ankylosed

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 30746

TWO STAGE REVISION AFTER INFECTION FOR HIP HEMI AND TOTAL ARTHROPLASTY

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Background: Two stage revision arthroplasty of the hip is considered a successful method for the treatment of infected hip arthroplasty. The first stage entails meticulous debridement and removal of the infected implant, followed by the insertion of a cement spacer loaded with antibiotic, in order to eliminate the infection. During the second stage the cement spacer is removed and the final prosthesis is implanted after verification of infection clearance. The procedure is more technically demanding than primary total hip replacement and entails a higher rate of complications. Patients and Methods: Between May 2007 and October 2011, thirty patients were presented to Assiut University Hospitals with infected hip hemi or total arthroplasty, whom were treated by two stage revision hip arthroplasty. Results: The functional and clinical outcomes were satisfactory with a mean Harris hip score of 79. Conclusion: Two stage revision arthroplasty is a successful method of treatment for infected hip hemi and total arthroplasty.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty Infection - Ankylosed

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 30818

TOTAL HIP ARTHROPLASTY IN ANKYLOSED HIP, SHORT TERM RESULTS

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Introduction: Total hip arthroplasty (THA) is indicated in ankylosed hip (no motion in hip joint) for prevention of degenerative diseases of ipsilateral knee or opposite hip and low back pain or for painful pseudoarthrosis of fused hip. Sever contractures of adjacent soft tissue, atrophic abductors, acetabular deficiencies, leg length discrepancy, remaining hardware, fibrotic soft tissues from previous surgery, intraoperative fractures and infection all are difficulties of these operations. This study evaluates the short term results of this arthroplasties. Materials and methods: 31 patients with ankylosed hips are undergone THA. Preoperative range of motion(ROM) of hip, Harris Hip Score(HHS), post operative ROM and HHS and infection, intraoperative periprosthetic fracture, acetabular or femoral deficiencies, type of prosthesis and heterotopic ossification (HO) and Deep vein thrombosis (DVT) are considered for average 3.5 years. Results: Rom increased from zero to average 85 degree flexion, 20 degree abduction, 10 degree extension and 10 degree adduction. HHS increased dramatically and quality of life improved significantly. No clinically diagnosed DVT observed. 5 acetabular reconstructions were needed and 3 intraoperative periprosthetic were occurred. Discussion: THA for ankylosed hips seems to be a useful procedure with low morbidity and complications. If it is done with good preoperative planning and attention to details, it will be a magic operation. Key words: Total hip arthroplasty, ankylosed hip, fused hip, Harris hip score.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty Infection - Ankylosed

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31811

THA FOR BONY ANKYLOSED HIPS

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We have converted 166 ankylosed hips in 105 patients by THA over past 23 yrs. (1987 to 2010) with mean follow up of 7 yrs (1yr to 22 yrs). All patients had spontaneous bony ankylosis post Ankylosing spondylitis in 90, Rheumatoid arthritis in 8, sero negative arthritis in 5 and post tuberculosis in 2. Mean age group was 36 yrs with 94 males and 11 females. 61 patients had bilateral hip involvement (122 hips). We used New Bhosale's Dual hip surgical approach in 78 hips where posterior and anterior hip was exposed through same skin exposure with preserving gluteal muscles attachment and avoiding spit. Preserving gluteal muscles plays an important part in preventing gluteal lurch post-operatively. Single stage bilateral THA done in 46 patients (92 hips) Mean HSS score improved from pre-op 40 to post op 89. 68 patients have associated spine ankylosis. Cementless THA done in 106 hips, Hybrid in 14 hips while cemented in 46 hips Post of complications include calcar splintering in 4, dislocations in 4, transient femoral nerve palsy in 3, heterotrophic ossification in 21 (12%), infection in 6, implant loosening in 24 (14%). We have learned that once mobility is achieved in ankylosed hip muscle function return to near normal function over period of 6 to 12 months even in long standing spontaneous ankylosis of hip. It is a highly demanding and rewarding procedure (Key words: Hip ankylosis, Total hip Arthroplasty, Bhosale's dual hip approach).

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty Infection - Ankylosed

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31417

SURVIVAL OF TOTAL HIP ARTHROPLASTIES – AN EAST AFRICAN STUDY

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Introduction: Total Hip Replacement Arthroplasties (THRA) have been carried out in East Africa for over two decades. Data from European and American centres suggests that cemented implants have survivorship of over 90% at 15 years. There is a paucity of data concerning survivorship of implants in Africa. We conducted a follow up study to determine the survival of THRA implants at a centre in Kenya. Methods: A retrospective cohort study was conducted of all patients undergoing THRA at the centre since 1998. Patients were followed up in the outpatient clinic. In addition, patients who had not returned for follow-up in the last 12 months were contacted by phone and/or mail. A wide variety of cemented and non-cemented implants were used. End points of the implant were revision or removal for any reason and death. Survival was analysed by the use of Kaplan Meir tables. The study was approved by the institution ethics committee. Results: A Total of 1100 arthroplasties were conducted over the 10 year period. Forty hips were revised while fifteen were removed without the replacement of another implant. Three patients died in the period. The overall ten year survival was 77%. Discussion: The survival of implants in the East African Region is lower than that reported in other areas. This may be due to increased demands on the implant or less than perfect surgical techniques.

Date: 2012-11-29

Session: Hip: Total Hip Arthroplasty Infection - Ankylosed

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31883

CHALLENGES OF TOTAL HIP REPLACEMENT IN WEST AFRICAN SUB REGION: THE NATIONAL ORTHOPAEDIC HOSPITAL ENUGU EXPERIENCE

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Introduction: Total Hip Replacement is relatively new in Nigeria and recently commenced at the National Orthopaedic Hospital Enugu (NOHE) which is one of the three Orthopaedic centres in Nigeria. This paper reviews constraints and challenges over the initial three and half years at NOHE with a view to sharing local challenges via pictorial presentations of case reports, showing solutions proffered and seeking more information on better options to move this evolving sub specialty in our region forward for better patient care and outcome. Methodology: A prospective analysis of 70 cases done from November 2008 till January 2012 was done. Result: Constraints include poverty, ignorance and illiteracy leading to late presentation with a complex primary hip which is akin to a revision hip at presentation. Limited expertise for both the surgeons and the theatre nurses in arthroplasty. All these alongside poorly developed infrastructure give rise to peri-operative challenges which include prolonged operation time, excessive blood loss, delay in patient mobilisation, implant dislocation, periprosthetic fractures and infection. Conclusion: Better outcome will need patient education, institutional support towards provision of a wide range of prosthesis (primary and revision), appropriate theatre facility, and capacity building of surgeons and support staff.

Date: 2012-11-29

Session: Knee: Total Knee Arthroplasty & Navigation

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 33157

REVIEW OF 273 TOTAL KNEE ARTHROPLASTIES PERFORMED ACCORDING TO A COMPUTER ASSISTED ALGORITHM FOR MEDIAL RELEASE IN VARUS KNEES

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Introduction: In 2007, we published an algorithm for varus knees using navigation defining the most appropriate release with respect to pre-implant valgus stress assessment. The aim of this study was to review five years of use of this algorithm. Material-Method: Between July 2006 and October 2011, each varus knee was assessed and stressed and extension of the release was decided according to the algorithm. At the end of the surgical procedure, the surgeon assessed the knee and adjusted the release further if necessary. Based on the recorded navigation data, the expected medial release was predicted and compared to the actual one. The knees where the release predicted by the algorithm and the actual one completed were different were investigated further and details of release discrepancy recorded. Results: 273 varus knees (43%) had complete navigation data available. 184 (67.4%) of the knees had no release, 50 (18.3%) had a moderate release and 39 (14.3%) extensive release. 217 (79.5%) were released according to algorithm. Of the 56 knees (20.5%) not released according to the algorithm, half were released more and half less. 52 cases were within one "grade" of release i.e. no release to moderate release, and in only four cases were two grades apart i.e. no and extensive release. Discussion: Eight knees out of ten were well balanced following the algorithm. Most of inaccurate predictions were within one "grade" of release. Discrepancy between predicted and actual release could be related to several factors such as inability to reproduce standardised valgus stress.

Date: 2012-11-29

Session: Knee: Total Knee Arthroplasty & Navigation

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 33082

NAVIGATED KNEE ARTHROPLASTY FOR POSTTRAUMATIC ARTHROSIS – EARLY RESULTS

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INTRODUCTION: Post-traumatic gonarthrosis is often accompanied by severe deformity and axis deviation. In theory, navigated arthroplasty can overcome some of the problems in this setting; **OBJECTIVES:** We evaluated the navigated technique of the TKA, including technical difficulties, learning curve and the feasibility in bony deformity. **METHODS:** Between 7/06 and 12/07 we treated 50 patients with severe post-traumatic osteoarthritis. 28 patients were male, mean age at TKA was 59 (32-77) years. On average patients had 2.83 previous operations. In all cases, a navigational system 5 PRAXIM, Tronche/France) was used with infrared-tracking and bone morphing software. The implant was mobile bearing LCS knee (Depuy/ USA). Study setup was prospective, follow-up on average 14.5 months (11-25) including the IKDC. **RESULTS:** 4 times the procedure was finished in conventional technique, reasons were decision of the surgeon, a missing femoral cut block and a broken screw tracker-fixation. In one case a hinged prosthesis was implanted due to instability. There was no failure of the navigational system. There was a clear learning curve. Preoperative extension deficit was improved from average 7,1° (0-30°) to 1.67° (0-10°) postop., flexion contracture improved from av.95° to 103°. The combined knee society score improved from 83 preoperatively to 157 point at F/U; **CONCLUSION:** Navigated knee endoprosthesis is a reliable tool for the trauma surgeon with few technical problems. Especially for surgeons with less experience in TKA, planning of implant size and position is very helpful. With post-traumatic deformity the surgeon can gain valuable information and assistance to improve alignment and ligamentous balancing.

Date: 2012-11-29

Session: Knee: Total Knee Arthroplasty & Navigation

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 31474

COMPUTER NAVIGATION OF SOFT TISSUES IN TOTAL KNEE REPLACEMENT

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Following the success of computer navigation in producing consistently accurate alignment, the focus has shifted to use of these techniques for soft tissue assessment during total knee replacement (TKR). We undertook a prospectively randomised clinical study to compare two methods of soft tissue balancing in TKR. One method employed independent cutting of the femur and tibia followed by subjective assessment with trial prostheses and soft tissue release as deemed necessary. This was termed 'Bone Referencing'. The other method, termed 'Ligament Balancing', involved cutting the tibia first and titration of tissue balance and alignment parameters to guide femoral cuts. Our total sample comprised 77 subjects with 80% statistical power. To compare the results we used (a) coronal laxity testing and (b) assessment with computer navigation generated passive knee range of movement graphs. The graphical assessment was validated with coronal laxity testing. There was no overall difference in soft tissue balance achieved between the techniques. Correlation with pre-operative status of the knees revealed the Ligament Balancing technique to show better results in a smaller subgroup (24.7%) with greater pre-operative tissue imbalance. This did not however translate into a significantly different clinical outcome at one-year post-operative follow-up. We believe that the combination of osteoarthritis induced ligament contractures with varied inherent morphology results in unusual knee kinematic patterns that consequently present difficulties with soft tissue balancing during TKR. The surgeon might need to vary his technique of tissue balancing in order to achieve an optimal result in all TKR.

Date: 2012-11-29

Session: Knee: Total Knee Arthroplasty & Navigation

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 33051

ASSESSMENT OF JOINT GAP FOR MID-FLEXION (45°) AND HYPER-FLEXION (120°) DURING NAVIGATION-ASSISTED TOTAL KNEE ARTHROPLASTY

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The aim of gap balancing during total knee arthroplasty(TKA) is to achieve rectangular flexion and extension gaps. However, assessment of gap in midflexion(45°) and deep flexion(120°) is obscure. The hypothesis of this study was that if the mediolateral gap is assessed in different knee flexion angles(0°, 45°, 90°, 120°), gap difference would be categorized into several groups. Fifty knees operated by TKA using a navigation-assisted gap balancing technique were evaluated with a minimum of 2-year follow-up period. Intraoperatively, final mediolateral gap in each flexion angle(0°, 45°, 90°, 120°) was measured after tibia/femoral bone resections with femoral prosthesis in situ. Clinical outcomes were assessed at 3, 6, 12 and 24 months postoperatively using the Knee Society Score(KSS) and Western Ontario MacMaster(WOMAC)score. The Analysis of variance and Pearson correlation analysis test was performed. All 50 cases were managed to have rectangular gap at 0° and 90°. The last follow-up mechanical axis was within 3° in all cases. Patients were divided into 4 groups. Group1: no gap difference, Group2: Lax in midflexion, Group3: Lax in hyperflexion and Group4: Lax in both midflexion and hyperflexion. Number of patients in each group was: Group1; n=32(64%) Group2; n=10(20%), Group3; n=4(8%) and Group4; n=4(8%). All of the joint gaps with significant difference(>3mm) were in trapezoidal shape with a wider lateral side. This study demonstrated significant proportion(20%) of TKA cases had laxity in midflexion(45°) angle even when rectangular extension(0°)-flexion(90°) gap was achieved. However, clinical significance was not found for this group in this short term follow-up study.

Date: 2012-11-29

Session: Knee: Total Knee Arthroplasty & Navigation

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 32457

ANALYSIS OF VALGUS ANGLE FOLLOWING COMPUTER ASSISTED TOTAL KNEE ARTHROPLASTY – A RADIOGRAPHIC STUDY

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INTRODUCTION: Proper limb alignment, soft-tissue balance, and component fixation are the cornerstone for a successful outcome in knee arthroplasty surgery. The restoration of the mechanical axis (MA), is important in maximizing the long-term success of this procedure. During surgery, ideal alignment is achieved with properly oriented bone cuts, made in conjunction with appropriate soft-tissue releases. On the femoral side, most surgeons routinely use a fixed valgus cut angle (VCA) of 5° or 6° to restore the MA. Various studies have shown that mechanical axis is not restored with fixed angle resection, however this still remains the most commonly used technique for restoring mechanical axis. The purpose of this retrospective radiographic review is to analyse the variability in the valgus angle following computer assisted TKA. **MATERIALS AND METHODS:** 25 patients who underwent computer assisted TKA were involved in the study. A total of 40 knees were analysed using post operative CT scanogram. The valgus angles were measured in all the knees in which the femoral component was aligned 90 deg (plus or minus 3 deg) with the mechanical axis in the coronal plane. **RESULTS:** The average angle formed by the femoral component with the mechanical axis was 91.6 deg (87.1- 93) and the average valgus angle calculated was 6.17 deg (3.1 – 7.64). **CONCLUSION:** The conclusion of our study is that although variability exists in the valgus angle, most of the angle in our study lie within the range of 5– 7 deg that is commonly used in jig based TKA.

Date: 2012-11-29

Session: Knee: Total Knee Arthroplasty & Navigation

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 32839

EVALUATION OF ACCURACY OF PINLESS NAVIGATION SYSTEM USING POST OP LONG LEG RADIOGRAPH

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Aim: Computer navigation is gaining popularity as it enables the surgeon to make precise femoral and tibial cuts. Correct position of prosthesis in coronal and sagittal plane is paramount to restore mechanical axis and achieve good outcome. The use of pins fixed to bone to track the bony landmarks is the single most reason why a large number of surgeons refrain from navigation routinely. We describe a novel pinless navigation system which is quick and easier to use. We evaluate the accuracy of a pinless navigation system with long leg postoperative radiographs. **Material and Methods:** A prospective study was conducted from April 2011 to October 2011 including 20 patients. All TKA were performed by a single surgeon (AA) with over 25 years' experience of joint replacement and ten years using navigation. Intraoperative data about prosthetic position was measured with Brain Lab Navigation software. Postoperatively long leg views were performed to evaluate accuracy prosthesis. **Results:** Average measurements of tibial varus/valgus, femoral varus/valgus, posterior slope and fixed flexion deformity reading was 1.4, 1.2, 6.3, 3.5 and 1.1, 1.4, 8.2, 4.4 degrees in computer navigation and long leg radiographs respectively. There was statistically significant difference in posterior slope between the two groups ($p=0.01$). **Conclusion:** Intra-operative readings about the position of femoral and tibial prostheses are within 1 degree of the true component position. Our study suggests that intraoperative data was accurate enough in assessing the varus and valgus angles for both the femur and tibia. It was not as reliable in assessing the posterior slope.

Date: 2012-11-29

Session: Knee: Total Knee Arthroplasty & Navigation

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 32894

**ACCELEROMETER-BASED, PORTABLE NAVIGATION VERSUS
IMAGELESS, LARGE CONSOLE COMPUTER ASSISTED NAVIGATION IN
TOTAL KNEE ARTHROPLASTY: A COMPARISON OF RADIOGRAPHIC
RESULTS**

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Introduction: Computer assisted surgery (CAS) systems have been shown to improve alignment in total knee arthroplasty (TKA), yet concerns regarding costs, operative times, pin sites, and the learning curve have limited their widespread acceptance. The purpose of this study was to compare the alignment accuracy of an accelerometer-based, portable navigation device (KneeAlign2) to a large console, imageless system (AchieveCAS). Methods: 62 consecutive patients (80knees) received a posterior cruciate substituting TKA using the Achieve CAS system. Subsequently, 65 consecutive patients (80knees) received a posterior cruciate substituting TKA using the KneeAlign2 to perform both the distal femoral and proximal tibial resections. Postoperatively, standing AP hip-to-ankle radiographs were obtained, from which the lower extremity mechanical axis, tibial component varus/valgus and femoral component varus/valgus were digitally measured. The total tourniquet time for each procedure was recorded. Results: In the KneeAlign2 cohort, 92.5% of patients had an alignment within 3 degrees of a neutral mechanical axis (vs. 86.3% AchieveCAS), 96.2% had a tibial component alignment within 2 degrees of perpendicular to the tibial mechanical axis (vs. 97.5% AchieveCAS) and 94.9% had a femoral component alignment within 2 degrees of perpendicular to the femoral mechanical axis (vs. 92.5% AchieveCAS). The mean tourniquet time in the KneeAlign2 cohort was 48.1 minutes versus 54.1 in the AchieveCAS cohort. Discussion: Accelerometer-based, portable navigation can provide the same degree of alignment accuracy as large console, imageless CAS system in TKA, while also decreasing operative times. The KneeAlign2 combines the accuracy of large-console CAS systems, while providing a level of familiarity with conventional alignment methods.

Date: 2012-11-29

Session: Knee: Total Knee Arthroplasty & Navigation

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 31572

A RANDOMIZED CONTROLLED TRIAL COMPARING PATIENT SPECIFIC INSTRUMENT WITH CONVENTIONAL INSTRUMENT AND COMPUTER NAVIGATION IN TOTAL KNEE ARTHROPLASTY

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Background: Surgeons use conventional instruments (CON), computer navigation (NAV) or more recently patient specific instruments (PSI) to achieve accurate bone cuts in total knee arthroplasty (TKA). We perform a randomized control trial to compare their tourniquet times and post-operative lower limb alignments. Patients and Methods: From December 2010 to June 2011, 30 knees in 28 patients were recruited. There were 7 men and 21 women. The average age was 66.9 (SD 7.0, range 54-78) years. The diagnosis was osteoarthritis in 29 knees and rheumatoid arthritis in one knee. There were 15 left knees and 15 right knees. They were randomized in 1:1:1 ratio into CON, NAV and PSI groups. The prosthesis and surgical routines were standardized. Post-operative standing long films of the entire lower limbs were taken. Results: The tourniquet times of CON group (52.4 +/- 10.6 minutes) and PSI group (57.5 +/- 17.7 minutes) were significantly shorter than that of NAV group (76.8 +/- 13.4 minutes) ($p < 0.001$ and $p = 0.01$ respectively) ; the difference between CON and PSI groups was insignificant ($p = 0.45$). The knees were well aligned (mechanical axis within 3 degrees of varus to 3 degrees of valgus) in 5/10 CON knees, 8/10 NAV knees and 7/10 PSI knees; the differences were not significant. Significance: Patient specific instrument is a new option in TKA. Our early experience showed that its tourniquet time was similar to that of conventional instrument, and its lower limb alignment achieved was comparable to that of computer navigation.

Date: 2012-11-29

Session: Knee: Total Knee Arthroplasty & Navigation

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 31429

VERIFICATION OF ACCURACY OF CONVENTIONAL NON-NAVIGATED FEMORAL AND TIBIAL ALIGNMENT JIGS USING PINLESS NAVIGATION IN PRIMARY TOTAL KNEE ARTHROPLASTY (TKA)

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Aim: Goal of TKA is restoration of mechanical axis and adequate soft tissue balance. It is imperative to implant the prosthesis correctly in sagittal and coronal plane to get the best results. We conducted a prospective study to evaluate the accuracy of conventional non-navigated zigs using pinless navigation system. **Material and Methods:** A prospective observational study was conducted from April 2011 to October 2011 including 20 patients. Tibial and femoral bony cuts were made using extramedullary and intramedullary zigs respectively. Subsequently, Brain Lab pinless navigation system was only used to verify and measure the position of jigs in coronal and sagittal planes. Assessment was then made to see if prosthesis was in desired position to mechanical axis. **Results:** Tibial component was placed in varus in five cases and valgus in 15 patients. The average deformity in valgus/varus for tibial component was of 1.40. Femoral component was placed in varus, valgus and ideal mechanical alignment in 14, 4 and two patients respectively. The average deformity of femoral component in valgus/varus was of 1.13. Femoral component was placed in flexion in all the cases with average of 3.5 degrees. TKA with convention zigs failed to achieve ideal implant position in all the cases in present study. **Conclusions:** Conventional non-navigated TKA fails to achieve ideal implant position which is of paramount importance for both success and longevity of prosthesis. Computed navigation should be used routinely to achieve precise implant position to avert complication associated with prosthetic malalignment.

Date: 2012-11-29

Session: Knee: Total Knee Arthroplasty & Navigation

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 30851

**ALIGNMENT USING NEW MRI-BASED PATIENT MATCHED PIN
PLACEMENT GUIDES IN MINIMALLY INVASIVE TOTAL KNEE
ARTHROPLASTY**

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LKH Stolzalpe, Stolzalpe (AUSTRIA)

Introduction: Recently, new patient matched pin guides in TKA have been introduced. Using MRI, a three-dimensional model of the patient's knee anatomy is created. Based on this, femoral and tibial pin guides are designed. They are used on the patient during surgery as a guide for the pins. The hypothesis was that the pin guides would lead to better alignment. Methods: A prospective study to evaluate the coronal and sagittal alignment in 60 consecutive patients (36 female and 24 male, age 72 (52 to 86) years, 48 varus and 12 valgus deformities, mechanical axis 7 (0 to 25) degree) was carried out. In one group (30 patients) intramedullary femoral and tibial alignment jigs were used, whereas MRI-based pin guides (Patient Specific Instruments, Zimmer, Warsaw, USA) were used in the other group (30 patients). The alignment was determined on post-operative long-leg frontal and long-leg lateral films. Results: The coronal mechanical axis was significantly better in the MRI guided group (97%, within 3° varus/valgus) compared with the standard group (83%, within 3° varus/valgus). The sagittal alignment of the tibial component was also more accurate in the MRI guided group. The surgery time was reduced (76 minutes (52 to 92; 95 % CI 72 to 80) versus 87 minutes (49 to 121; 95 % CI 80 to 94) (Mann-Whitney, p=0.004)). Discussion: Using MRI-based pin guides gives a better correction of alignment compared with the standard technique. The surgery time is reduced.

Date: 2012-11-29

Session: Knee: Unicompartmental Knee Arthroplasty

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 32224

COMPARING MODULAR AND MONOBLOC TIBIAL COMPONENT DESIGNS IN PRIMARY UNICOMPARTMENTAL KNEE ARTHROPLASTY PROSPECTIVE RANDOMIZED STUDY

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Introduction: Patients can successfully be treated with unicompartmental articular replacement of the knee. Although potential advantages of modularity were not demonstrated, modular tibial implants are mostly used for this procedure. Method: Fifty six Knees in 43 patients with mean age of 56 year old (39-57) were randomized into two groups: a group receiving the unicompartmental prosthesis "Accuris" with a cemented polyethylene monoblock or modular metal back tibial component. The articular surfaces were identical in both groups. Pre operative and postoperative clinical scores and radiological data were collected. Results: Twenty six polyethylene monoblock and 30 modular metal back were implanted. At a mean follow-up of 48 months (26-84) nine revisions (TKA) were performed, seven revisions in monoblock group and two revisions in metalback group. ($p= 0.04$). In monoblock group reasons for revision were: one instability post traumatic ACL rupture, one OA progression to the other compartments and five revisions for aseptic implant loosening. In modular metalback group, one revision was done for pain with undetermined source (that was showing potential secondary gains) and one for OA progression. Conclusion: Although it is not clear that modularity provides some benefit in unicompartmental arthroplasty, the modular metal back components in our study presented a significantly lower revision rate for aseptic loosening than monobloc all polyethylene components. Therefore we do not recommend implantation of all polyethylene tibial implant with the Accuris system. On the other hand, our results may not be applicable to other unicompartmental implants designs and further research should compare other implants on the market proposing modular and non modular tibial designs.

Date: 2012-11-29

Session: Knee: Unicompartmental Knee Arthroplasty

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 31668

MOBILE UNICOMPARTMENTAL KNEE ARTHROPLASTY: A PROSPECTIVE INDEPENDENT STUDY. FIVE TO 11 YEARS FOLLOW-UP

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Introduction: The use of unicompartmental knee arthroplasty(UKA) in the treatment of medial osteoarthritis of the knee has rapidly increased over the recent years. We report the outcome of the first mobile UKAs with a minimal 5 year follow-up(FU) years performing a minimal invasive surgical technique. **Methods:** Between 1999 and 2005, 138 consecutive medial UKAs were implanted by a single surgeon. Nine patients deceased prior to their 5 year assessment. The mean FU to date was 7.2 years (range 5–11.5 years), and the mean age was 69.8 years. Pain, function and radiography were evaluated pre- and postoperatively and the survival of the arthroplasty was analysed. **Results:** The mean Knee Society knee score at latest FU was 90.9(57.0-100). The Oxford Knee score was 38.5(4-48). Eight knees with persisting pain complaints were successfully treated by arthroscopic procedures. Six knees were revised to total knee arthroplasty of which 3 because of failure of using strict selection criteria. The 8-year cumulative survival rate was 95%. Ninety-six knees were available at 5 years for fluoroscopic evaluation and radiolucency beneath the tibial component was found in 21% (N=20:5 complete and 15 partial). None of these patients had pain complaints. **Discussion/Conclusion:** This study shows a high survival rate of this mobile UKA. The presence of radiolucency had no influence on functional outcome, survival and paincomplaints. When strict indication criteria are followed, an excellent and in our opinion reliable and durable functional and radiological outcome can be expected in the medium term.

Date: 2012-11-29

Session: Knee: Unicompartmental Knee Arthroplasty

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 30799

EXTENDED SAGITTAL SAW CUT SIGNIFICANTLY REDUCES FRACTURE LOAD IN CEMENTLESS UNICOMPARTMENTAL KNEE ARTHROPLASTY COMPARED TO CEMENTED TIBIA PLATEAUS: AN EXPERIMENTAL CADAVER STUDY

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Periprosthetic tibial plateau fractures represent a rare but serious complication in unicompartmental knee arthroplasty and are associated with extended sagittal tibial bone cuts. These can occur during the surgery, weaken the posterior cortex of the tibia and are associated with periprosthetic tibial plateau fractures. Although excellent long-term results have been reported with cemented unicompartmental knee arthroplasty, there is high interest in cementless fixation. The aim of the study was to compare fracture loads of cementless and cemented unicompartmental knee arthroplasty. Tibial components of the Oxford Uni were implanted in six paired fresh-frozen tibiae with a defined extended saw cut (10°) at the dorsal cortex of each specimen. In one set, surgery was performed with cement fixation and, in the other, cementless components were implanted. Vertical loads were then applied under standardised conditions to fracture the specimens. Median loads of 3.7 (0.7-6.9) kN led to fractures in the cemented group, whereas cementless fixated tibiae fractured with a median load of 1.6 (0.2-4.3) kN ($P = 0.02$). The loading capacity in tibiae with cementless components is significantly less compared to cemented fixation. The results show that in case of an extended sagittal bone cut patients especially those with poor bone quality who are treated with a cementless unicompartmental knee arthroplasty are at higher risk for periprosthetic tibial fractures.

Date: 2012-11-29

Session: Knee: Unicompartmental Knee Arthroplasty

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 32085

REASONS FOR REVISION OF UNICONDYLAR KNEE ARTHROPLASTY – ANALYSIS OF AN INSTITUTIONAL JOINT REGISTRY

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Using an institutional joint registry we retrospectively analysed the reasons for revision to total knee arthroplasty of three different unicondylar knee arthroplasty (UKA) types. From 1997 to 2008, 646 patients (female 380; male 286) received one of three fixed bearing UKA: Allegretto Uni (1997-2004, n=268, 60% females); Preservation (2004-2006, n=153, 52% females), and ZUK (2005-2008, n=225, 53% females). The overall revision rate was 7.4%, for Allegretto 13.1%, for Preservation 6.5% and for ZUK 1.3%. Time to revision was overall median 29 months (range 2–122), for Allegretto 35 months (range 2-122), for Preservation 36 months (range 6-58) and for ZUK 16 months (range 6–27). Overall revision rate for females were 9.2% compared to 5.3% for males. The main reasons for revision were implant loosening (46%), disease progression (23%), pain (10%), fracture (6%), instability (4%), implant breakage (4%). Time to revision for tibial component loosening (total n=13, Allegretto n=10, Preservation n=3) was median 34 months (range 2–97), for femoral component loosening (total n=9, Allegretto n=3, Preservation n=6) 25 months (range 4–51), for disease progression 63 months (range 6–122) and for implant breakage (n=3, all Allegretto Uni, tibial component n=1, femoral component n=2) 83 months (range 57-111). In this study the majority of UKA failures were due to implant loosening or progression of osteoarthritis while infection was not identified as failure mode for UKA. Optimized implant design and surgical technique as well as careful patient selection may help to further improve the longevity of UKA in the future.

Date: 2012-11-29

Session: Knee: Unicompartmental Knee Arthroplasty

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 31676

COMPLICATIONS AND REVISIONS OF THE OXFORD PHASE 3 PROSTHESIS – A 10-YEAR PROSPECTIVE INDEPENDENT STUDY

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Introduction: The interest in unicompartmental knee arthroplasty (UKA) for medial osteoarthritis using a minimally invasive surgical technique (MIS) increased rapidly over the last 10 years. The use of this procedure is still controversial regarding recent reports of high failure rates. Aim of this study was to analyze the cause of complications and the rate of revision during the first ten years of experience. **Methods:** Between 1999 and 2009 276 consecutive medial UKAs were implanted by a single surgeon. The mean follow-up (FU) was 54 months and mean age was 70 years (range 49-91). **Results:** One year postoperatively 17 patients (7.3%) experienced moderate or severe pain. Of these patients with a UKA in place only 2 patients (0.7%) had moderate pain at final FU. Eleven patients underwent an arthroscopic procedure for pain related intra-articular causes. Revisions occurred in 9 patients: 3 knees were revised due to pain complaints with failure of proper selection criteria, 3 because of dislocation of the meniscal insert, 2 due to progression of lateral compartment osteoarthritis and one because of cobalt allergy. **Discussion/Conclusion:** The majority of revisions occurred due to failure of using proper selection criteria (1.1%) or by technical errors (0.7%). Pain complaints have been recognized and successfully treated by means of arthroscopic surgery in 2.9% of the knees. We recommend this procedure as a well-established treatment option of unicompartmental osteoarthritis of the knee joint if strict indication criteria are followed, proper surgical technique is used and careful follow-up of the patients is established.

Date: 2012-11-29

Session: Knee: Unicompartmental Knee Arthroplasty

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 31702

ANTHROPOMETRIC MEASUREMENT OF THE PROXIMAL TIBIA TO DESIGN THE TIBIAL COMPONENT OF UNICONDYLAR KNEE PROSTHESIS FOR THE TURKISH POPULATION

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Objective: The aim of the study is to compare between morphometry of proximale tibia with unicondylar knee prosthesis used in Turkish population. Methods: Anthropometric measurements of the proximal tibial plateau of 300 knees in 300 Turkish patients with knee pain were obtained using MRI. In the medial plateau, we measured the anteroposterior(AP), mediolateral(ML), widest dimension(WD) and aspect ratio(WD/AP) and those were compared with the similar dimensions of five unicondylar knee prostheses conventionally used in Turkey. Results: The average value for the AP and WD dimension were found 48,2mm and 30,7mm in patients, respectively. We compared an average value with five templates(Zuk, Oxford, Accuris, Mitus, Osteonics) There are no significant differences between female/male and right/left dimensions but in 50 to 59 decade, AP dimension was smaller from others that was found 47mm. The results show that Oxford and Mitus average dimension had a possitive correlation with AP length, Oxford and Osteonics average dimension had a possitive correlation with WD length. Other designs lengths were smaller or larger than mean population measurement. The Biomet design (Oxford) was found to follow the population data more closely as compared to the others in either decade, whereas The Zimmer design(Zuk) was found smaller in both dimensions which compared the others. Conclusion: In literature, this is the first study focusing on morphometry of knee of Turkish population regarding UKA. The size mismatch for an either given AP or WD dimension between the conventional designs and population data was due to their relatively different aspect ratio as compared to the population data.

Date: 2012-11-29

Session: Knee: Unicompartamental Knee Arthroplasty

Time: 17:00 - 18:30

Room: Maktoum A

Abstract no.: 31569

FINITE ELEMENT ANALYSIS OF TREATMENT OPTIONS FOR TIBIA BONE LOSS IN REVISION TOTAL KNEE ARTHROPLASTY

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Tibial bone defects are commonly encountered in revision total knee arthroplasty. We investigated the optimal treatment for different sizes of tibial bone defect using finite element method. Three-dimensional finite element models of TKA were constructed. Five groups of wedge-shaped bone defects of 5, 7.5, 10, 12.5 and 15mm in the medial tibial plateau were simulated. Three treatment options of cement, cement with screws reinforcement and metal augment were simulated to repair the bone defect. A compression load of 2000 N was applied vertically to the tibial implant. The maximum shear stress and equivalent stress in the cortical and cancellous bone below the cement/bone interface were compared. In 15mm defect, metal augment group showed the lowest equivalent stress and shear stress compared to cement and cement with screw groups. In 12.5mm defect, metal augment group showed similar equivalent stress compared to cement with screw groups ($p>0.05$), but shear stress was significant lower ($p<0.05$), while cement group had highest stress ($p<0.05$). In 10mm defect, cement only show higher shear stress than cement with screws reinforcement and metal wedge. In 5 & 7.5mm defects, no significant differences were observed in the three treatment options. In 12.5 and 15mm defect, cement with screw showed higher interface shear stress compared to metal augment group, which implies higher incidence of loosening. Metal augment is recommended to treat defect larger than 10mm. In defects smaller than 10mm, 3 treatment options showed no difference. Therefore surgeons can choose either one according to their own experience and preference.

Date: 2012-11-29
Session: Spine: Degenerative I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 33153

A PROSPECTIVE RANDOMIZED TRIAL BETWEEN TRANSFORAMINAL (TLIF) AND INSTRUMENTED POSTEROLATERAL FUSION (PLF), TWO-YEAR FOLLOW-UP

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Background: Theoretically, circumferential fusion should improve outcomes. Purpose/ Aim of Study: To test Transforaminal-interbody-fusion(TLIF) compared to instrumented posterolateral fusion group (PLF). Materials and Methods: During 01.11.2003-.01.11.2008 100 pat's were prospectively randomized to TLIF or PLF. The TLIF-group was operated using TSRH and Implex and allograft. The PLF-group was operated using TSRH (Medtronic) and allograft. Inclusions criteria: segmental instability due to disc degeneration, former disc herniation, spondylolisthesis < 2. Functional outcome was registered prospectively, after one & two year, using Dallas-Pain-questionnaire (DPQ), SF-36, Low-Back-pain-questionnaire. Results: Sex ratio was 40/58. 51 patients had TLIF, 47 PLF. Mean age 49(TLIF)/45(PLF). No statistic difference in outcome between groups could be detected, concerning daily activity, work leisure, anxiety/depression, social interest. No statistic difference concerning Back pain or Leg pain. In both the TLIF and the PLF group the patients had significant improvement in functional outcome, back pain, and leg pain compared to preoperative. Daily-activities $p > 0.0002/0.00001$, Back-pain $> 0.00001/0.00001$, Leg-pain $> 0.0007/0.0002$. Operation time in the TLIF-group was significantly higher $p < 0.00001$, than PLF-group. The blood loss was significantly higher in the TLIF $p > 0.0011$. No statistic difference in radiological fusion. Conclusions: No statistical difference between groups at 2 years follow-up in functional outcome & fusion rate. Both groups improved significantly in DPQ, ODI, LBPRS and SF-36. Since the operation time, blood loss was significantly higher in the TLIF-group and there was a tendency towards more leg pain in the TLIF-group one could argue why prolong operation time, and increase blood loss and economic expenses.

Date: 2012-11-29
Session: Spine: Degenerative I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 30953

X-STOP VERSUS DECOMPRESSIVE SURGERY FOR LUMBAR NEUROGENIC CLAUDICATION – A RANDOMIZED CONTROLLED TRIAL WITH TWO-YEAR FOLLOW-UP

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While decompression is the golden standard for lumbar spinal stenosis surgery, interspinous spacers have been developed for the same purpose but the two modalities have not been compared in a study. Purpose: To compare the outcome of indirect decompression by means of the X-Stop implant to conventional decompression in patients with one to two level-symptomatic lumbar spinal stenosis. Study design/setting: Prospective randomized controlled trial. Non-inferiority hypothesis. Two-year follow-up. Intention-to-treat as well as As-Treated analyses. Patient sample: After power calculation 100 patients included, 50 in treatment in each group. Randomization performed by envelope. X-Stop operations performed under local anaesthesia. Primary outcome measurement: Zürich Claudication Questionnaire (patient satisfaction, symptom severity and physical function). Secondary outcome measurement: VAS pain leg, back, SF-36, complications and re-operations. Results: Patients in both surgical groups improved significantly regarding both primary and secondary outcome measures. The results were similar at 6, 12 and 24 months and at no time point any statistical difference between the two types of surgery was seen. Three patients in the decompression group had further surgery, compared to 13 patients in the X-Stop group (7 of which operated on in one center). Results were identical in ITT and AT analysis. Conclusion: For lumbar spinal stenosis with neurogenic claudication, decompressive surgery as well as X-Stop are rewarding procedures. Similar results were achieved in both groups, however, with a higher number of re-operations in the X-Stop group. Patients having X-Stop removal and decompression experienced results similar to those randomized to and treated with primary decompression.

Date: 2012-11-29
Session: Spine: Degenerative I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 31608

TISSUE ENGINEERING APPROACHES TO DEGENERATIVE DISC DISEASE – A META-ANALYSIS OF CONTROLLED TRIALS

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Study Question: The objective of this systematic review was to accrue evidence for the effectiveness of cell/biomaterial treatments of degenerative disc disease (DDD) in controlled animal trails. Methods: A systematic search of PubMed, CINAHL, EMBASE, CCTR and CDSR was performed for in vivo studies on the effect of tissue engineering approach in the restoration of disc height and T2 signal intensity in DDD. Results: Our study produced strong evidence for a significant improvement in disc height after tissue engineering compared to nucleotomized discs in the short, intermediate, and long term. We also found that tissue engineered DDD treatments are able to approach normal disc height in the long term. Treatments employing both cells and biomaterials produced the best results. Similar findings were seen for T2 signal intensity. Conclusion: The current in vivo evidence suggests that tissue engineering is a feasible approach to restoring disc height and composition in DDD. Combinations of cells and biomaterials produce the best results, but we cannot make a recommendation yet as to which cells and materials.

Date: 2012-11-29
Session: Spine: Degenerative I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 31373

RETROGRADE EJACULATION FOLLOWING ANTERIOR LUMBAR SPINE SURGERY

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Background: Anterior lumbar interbody fusion (ALIF) has become a popular choice for treating various pathologies, largely because it preserves the posterior paravertebral muscles and ligaments. However, the anterior approach is also associated with various complications, including retrograde ejaculation (RE). The purpose of this study was to determine whether ALIF using BMP is associated with a higher incidence of RE than anterior approaches that do not involve the use of BMP, such as artificial disc replacement (ADR). Methods: We conducted a retrospective review of all male patients who received ALIF using BMP or ADR on at least the L5-S1 level between 2004 and 2011. Medical records were evaluated for the occurrence of RE and patients were contacted via phone to obtain current information. The incidence of RE was then compared between the two anterior lumbar surgery procedures. Results: Of the 95 cases of anterior surgery including L5-S1, 54 patients underwent ALIF with BMP (56.8%) and 41 patients were treated with ADR (43.2%). Postoperative RE occurred in 4 of the 54 ALIF patients (7.4%) and in 4 of the 41 ADR patients (9.8%). The incidence of RE was not significantly different between groups ($p = 0.7226$). Conclusions: We found that RE occurred at a similar rate in patients treated with ADR and ALIF with BMP. The overall rate of RE following retroperitoneal anterior lumbar surgery was higher than expected, which underscores the importance of counseling patients about this risk and specifically questioning patients about the symptoms of RE at postoperative visits.

Date: 2012-11-29
Session: Spine: Degenerative I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 32908

MULTIPLE LEVEL ENDOSCOPIC DECOMPRESSION OF LUMBAR CANAL STENOSIS

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A minimal invasive endoscopic microdiscectomy was carried out for treatment of lumbar canal stenosis of seven very old patients with multi-system failure, four men and three ladies. Our patients have acquired degenerative lumbar canal stenosis which includes the facets (arthropathy), ligamentum flavum (hypertrophy), posterior longitudinal ligament thickening, and intervertebral disk. Our classification includes central canal and lateral recess stenosis, clinically presented lumbosacral pain associated with neurogenic claudication and nerve root compression syndrome, radicular pain, weakness, and numbness along the distribution of the affected nerve. All our patients undergone a meticulous conservative treatment but surgical decompression is indicated in those persons who experience incapacitating pain, claudication, neurologic deficit, or myelopathy. Unfortunately our patients are declared unfit for general anesthesia by the anesthetic team and to some extent unable to take pain medication due to multi-system problems like heart disease, diabetes and renal problems, using minimally invasive techniques that only require local anesthesia by endoscopic technique we could perform foraminotomy and microdiscectomy of multi-level stenosis. These procedures achieve an accepted outcome as open back surgeries, but with a much shorter recovery time and fewer side effects and avoiding the complications of general anesthesia in addition to maintain the overall structural strength of the spine. In our opinion endoscopic foraminotomy and microdiscectomy can expand the indications of management to include certain multiple level stenosis of the lumbar spine.

Date: 2012-11-29
Session: Spine: Degenerative I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 32693

PSEUDOARTHROSIS OF THE LUMBOSACRAL JOINT (LSJ) AFTER LONG SEGMENT LUMBAR INTERBODY FUSION

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Between Jan. 2008 & Nov. 2009, 54 patients (31 females and 23 males) underwent pedicle screw instrumentation and posterior lumbar interbody fusion using autologous bone graft and titanium cages in 3 or more segments. The mean age was 66 years. The LSJ was said to be fused when the following criteria are met: the presence of continuous bony growth traversing the intervertebral space anterior to the cages, the angulation on the flexion-extension radiographs less than 5 degrees, and the absence of radiolucent zones around the cages and/or the pedicle screws. The minimum follow up period was 2-years. The patients' age, the number of fused segments and lumbar lordosis were evaluated for their association with pseudoarthrosis at LSJ. Results: Pseudoarthrosis developed at the LSJ in 7 out of 54 patients (12.96%). The smoking was found to have a statistically significant negative effect on fusion ($p= 0.003$). Both age and the number of levels have negative effect on fusion at the end of follow up but this effect was statistically insignificant. Conclusion: We are owing the relatively lower rate of pseudoarthrosis at the LSJ in this study, compared to many of the published results, to the use of autologous bone graft, and the anterior column support through the load sharing cages. However, there is a need to increase the fusion rate at this joint which may be through the addition of osteoinductive materials, the performance of posterolateral fusion and/or use of bilateral iliac screws at the primary surgery.

Date: 2012-11-29
Session: Spine: Degenerative I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 30854

LAMINOPLASTY VERSUS MULTIPLE ANTERIOR CERVICAL DISCECTOMY FOR CERVICAL SPONDYLOTIC MYELOPATHY IN PATIENTS WITH LORDOTIC CERVICAL SPINE

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Using anterior or posterior surgery for multilevel cervical spondylotic myelopathy continues to be the subject of considerable debate. Studies on the comparison of the two approaches are limited and few studies focus on anterior cervical discectomy and fusion (ACDF) versus open door laminoplasty (ODL). 40 patients (20 in the ACDF group and 20 in the ODL group) were evaluated from September 2005 to December 2008 as regard the clinical outcome (Nurick grade and JOA score), radiological changes, and complications. ODL showed significant more operative time (155 min Vs 95 min) and more blood loss (438 ml Vs 215) than ACDF. Both groups showed significant improvement in Nurick grade from 3.5 and 3.4 preoperatively to 1.85 and 1.95 respectively at last follow up ($p < 0.05$). Both groups significantly improved the JOA ($p < 0.05$) and recovery rate (RR) was similar (63.2% in ACDF group and 64.4% in ODL group). The cervical motion significantly decreased in both groups while it significantly improved in ODL group. Conclusion: both techniques are effective in treatment of cervical spondylotic myelopathy with no significant difference between the two groups as regard the clinical outcome (Nurick grade and JOA score), radiological changes. However the ODL group showed better cervical motion and, unfortunately, longer operative time and more blood loss.

Date: 2012-11-29
Session: Spine: Degenerative I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 32907

PERCUTANEOUS ENDOSCOPIC MICRO-DISCECTOMY LUMBAR SPINE – OUR EXPERIENCE IN DUBAI

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Lumbar discopathy and nerve root compression is a common condition causing low back ache and leg pain with numbness and sometimes some neuropathy. Selective Endoscopic decompression has been demonstrated for patient with relatively recent disc herniation to reduce recovery time of the patient; All of the patients had clinical signs or symptoms, supported with imaging procedures consistent with nerve root compression and had not responded to non operative management. This endoscopic method was performed in hundred and twenty patients with high selectivity forty one female and seventy nine male, eighty one Lt and twenty nine Rt side, 95 L4-L5, 35 L5-S1, 3 L3-4 and Follow-up evaluations clinically of pain score and numbness, neurological deficit if any in comparison to pre-op. status were performed at one, three, six months, after the surgery. All surgeries are done by same surgeons and same operative technique. Complications were identified. During the first three months after surgery, the patients treated with this endoscopic method had better Symptom Severity Scores, better Functional and recovery Status Scores, and better subjective satisfaction scores. During the first three months after surgery, they also had significantly better quality of life. No technical problems with respect to portal, instrument or surgical technique were noted. Conclusion: Good clinical outcomes and patient satisfaction are achieved more quickly when the endoscopic method of discectomy and nerve root decompression is used. endoscopic surgery is a safe and effective method of treating lumbar nerve root entrapment and for micro-discectomy.

Date: 2012-11-29
Session: Spine: Degenerative I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 30926

MINIMALLY INVASIVE DISK NUCLEOLYSIS, A NEW OPERATIVE PROCEDURE

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(UNITED STATES)

The treating orthopaedist is an arthroscopist for the knee and shoulder. The minimally invasive procedure being discussed is to be used on contained disks only. Of the 8,000 patients with back pain that were examined over the last twelve years, only 2,021 had surgery. The surgical selection process was based on the amount and location of the pain, sensation, reflex affectation, atrophy and on the MRI results confirming the fact that the MRI evidence of nerve involvement correlated with the clinical examination. Attention must be paid to reflex asymmetry and sensory abnormality correlating with the nerve root involved on the MRI exam. Atrophy of greater than one-half inch in the extremity involved is also a primary indicator, as well as the degree of severity of the loss of function. Major loss of function is, however, secondary to spine or lower extremity pain. Clinical examination and MRI examination correlation are critical in recommending surgery. The surgery was performed with the aid of a "Modified Stryker Decompressor". No patient was made worse, and their recovery time in the outpatient center ranged from 3 to 32 hours, with the average being 6 hours. Length of time on the operating table for the procedure to be performed was from 23 to 110 minutes, with the average time being 52 minutes. The number of disks operated per patient varied from 12 to 1, with the average being 2. Percentages of spinal sites operated were: cervical-24%, thoracic-4%, and lumbar-72%. Four of the 2,021 patients who underwent this surgery had a spinal headache, which lasted less than 6 weeks. 96% of the patients were satisfied with the results, and noted a 90% reduction in pain. The procedure is simple and well accepted, indicated by the fact that there were no permanent complications.

Date: 2012-11-29
Session: Spine: Degenerative I
Time: 08:30 - 10:00
Room: Maktoum B

Abstract no.: 31532

RANDOMIZED CONTROLLED CLINICAL STUDY OF OSTEOPOROTIC VERTEBRAL FRACTURES USING MAGNETIC RESONANCE IMAGING

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Introduction: Magnetic resonance imaging (MRI) enables us to diagnose osteoporotic vertebral fractures (OPVFs) correctly. Methods: A total of 86 patients are divided into two groups by medicines; Ca 800mg and VitD3 0.5 μ g (Group A; n=44) and A group medicines + bisphosphonates (Group B; n=42). A diagnosis of OVF is confirmed by findings of T1WI: low, STIR: high on MRI. Follow up was performed at least one year (A group n=21) and (B group n=23), and was evaluated new fractures occurrence, bony union, collapse. Results: Seventeen patients were difficult to diagnose OVF on plain radiogram only, but MRI enables us to do it. A single fracture was in 10 patients in initial hospital visit. There were 18 patients with multiple fresh fractures (above 2), and continuous multiple fractures 12 and others 11. In follow up, on MRI bony union completed within 6 months in both groups and new OSPVFs occurred in four (group A; n=21) and two (group B; n=20). The collapse rate (MD) changed from 0~66.7% (28.5%: Group A) and 0~86.7% (36.5%: Group B) to 9.3~72.2% (48.0%: A group) and 9.1~86.7 % (52.6%). If the intensity of fractured area is total in T1WI and mixed including low, iso and high on T2WI and STIR, this fracture induced acute severe collapse, and this type is burst fracture. Conclusions: MRI demonstrates not only fracture line but hemorrhage and edema in bone marrow. We shall prevent severe collapse of vertebral body and resulting in spinal deformity by evaluating MRI findings.

Date: 2012-11-29
Session: Spine: Degenerative II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 32707

**PSEUDOARTHROSIS OF THE LUMBOSACRAL JOINT (LSJ) AFTER
LONG SEGMENT LUMBAR INTERBODY FUSION**

Gouda MOHAMED, Hasan SALHEEN, Heinrich BOEHM
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Between Jan. 2008 & Nov. 2009, 54 patients (31 females and 23 males) underwent pedicle screw instrumentation and posterior lumbar interbody fusion using autologous bone graft and titanium cages in 3 or more segments. The mean age was 66 years. The LSJ was said to be fused when the following criteria are met: the presence of continuous bony growth traversing the intervertebral space anterior to the cages, the angulation on the flexion-extension radiographs less than 5 degrees, and the absence of radiolucent zones around the cages and/or the pedicle screws. The minimum follow up period was 2-years. The patients' age, the number of fused segments and lumbar lordosis were evaluated for their association with pseudoarthrosis at LSJ. Results: Pseudoarthrosis developed at the LSJ in 7 out of 54 patients (12.96%). The smoking was found to have a statistically significant negative effect on fusion ($p= 0.003$). Both age and the number of levels have negative effect on fusion at the end of follow up but this effect was statistically insignificant. Conclusion: We are owing the relatively lower rate of pseudoarthrosis at the LSJ in this study, compared to many of the published results, to the use of autologous bone graft, and the anterior column support through the load sharing cages. However, there is a need to increase the fusion rate at this joint which may be through the addition of osteoinductive materials, the performance of posterolateral fusion and/or use of bilateral iliac screws at the primary surgery.

Date: 2012-11-29
Session: Spine: Degenerative II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 32492

A VALIDATED NEW SPINE SURGERY SPECIFIC MORBIDITY SCORE TO PREDICT POSTOPERATIVE MORBIDITY AND MORTALITY IN ELECTIVE SPINE SURGERY

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Introduction: We aimed to formulate a scoring system specific to spine surgery by assigning specific weightage to various pre-operative comorbidities in a prospective analysis. The usefulness of Charlson's comorbidity index (CCI) in spine surgery setting was also studied. Material and Methods: The mortality, morbidity (major and minor) and pre-operative comorbidities were prospectively documented in 665 elective spine surgeries. Pre-operative comorbidities, ambulatory status, American Society of Anesthesiologists (ASA) class, CCI, body mass index (BMI), surgical approach, duration of surgery, levels of instrumentation and intra-operative blood loss were evaluated. Risk stratification weightage for each comorbidity was done and a morbidity score developed. The derived score was further validated prospectively in 118 patients. Results: There were three deaths, 34 major morbidities and 136 minor morbidities. Surgical factors [> 3 levels of instrumentation, >500 ml blood loss, duration of surgery >3 hours], ASA >2 and age >50 were found to be significant predictors of postoperative morbidity, CCI was not observed to be a sensitive predictor. Compared to CCI, our score had also better sensitivity (100% vs 87.5%), specificity (92.66% vs 70.64%), positive predictive value (50% and 17.9%) and negative predictive value (100% and 98.7%), than CCI score. Compared to patients with score ≤ 9 , risk of complications increased by 79% for a score of 10-12 and by 119% for a score ≥ 13 . Discussion: The scoring system has filled the need for a spine specific score. Multicenter prospective trials will further validate its use.

Date: 2012-11-29
Session: Spine: Degenerative II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 31912

LONG-TERM RESULTS OF LAMINOPLASTY FOR PATIENTS WITH OPLL OR CERVICAL SPONDYLOSIS – RADIOGRAPHIC CHANGES AND LIMITATIONS OF CERVICAL ROM AND ADL

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Introduction: There have been few reports concerning the causes of cervical ROM limitation and ADL disturbance of the neck in patients with laminoplasty. The purpose is to evaluate the long-term (> 10 years) outcomes and to detect those causes. Methods: 41 patients who underwent laminoplasty including C3 lamina for cervical myelopathy were divided into OPLL group (OPLL-G) and CS group (CS-G). OPLL-G with a mean age of 58.9 years included 22 patients with a mean follow-up period of 12 years. CS-G with a mean age of 62.6 years included 19 patients with a mean follow-up period of 11.0 years. We radiographically investigated cervical ROM, cervical lordosis, inter-vertebral fusion (IVF) and inter-spinous fusion (ISF), and clinically examined recovery rate using JOA score, neck pain and ADL disturbance. Results: The average pre and postoperative follow-up ROM were 31.5 degrees and 13.0 degrees in OPLL-G, and 44.8 degrees and 22.2 degrees in CS-G. Of all cases with ISF, 95% of OPLL-G and 86% of CS-G revealed C2/3 ISF. 50% of OPLL-G and 36.8% of CS-G revealed IVF. The average recovery rates of OPLL-G and CS-G were 49% and 61.7%. 77% of OPLL-G and 15.8% of CS-G had ADL disturbance. Conclusion: Postoperative neurological recovery in both groups was maintained over long-time period. However, both groups had reduction of cervical ROM, and ADL disturbance of OPLL-G were observed in high rate. As those factors, IVF and ISF were suggested. C3 laminoplasty is considered to be the cause of C2/3 ISF.

Date: 2012-11-29
Session: Spine: Degenerative II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 31106

**MODELING OF VERTEBRAL STRENGTH TOPOGRAPHY BY
QUANTITATIVE COMPUTED TOMOGRAPHY (CT) IMAGING**

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Background context: Accurate assessment of vertebrae stiffness and strength at discrete sites in-vivo is important for clinical diagnostics. Purpose: To check hypothesis that human vertebrae strength topography can be evaluated using quantitative (CT) images. Methods: Forty-eight vertebrae (8-L1, 8-L2, 8-L3, 10-L4, and 14 L5) from 14 cadaveric subjects (9 men and 5 women; age 43-99 years) were studied. Stiffness (modulus of elasticity) and strength (maximum load and maximum tolerable pressure) was assessed at 11 discrete sites on the cranial and caudal surfaces of each vertebra using an indentation test (IT). Before the IT, X-ray, DEXA, micro-CT, and conventional CT (con-CT) scanning of vertebrae was performed. Micro-CT characteristics of cortical and cancellous bone of 18 vertebrae were measured at each region of interest defined by a 3D coordinate system. Indices that correlated with stiffness and strength were selected for modeling. Predictive models of local stiffness and strength were created using selected indices obtained by micro-CT and con-CT (40 vertebrae) images. Results: Local stiffness and strength was highly variable. Endplate thickness and density in combination with adjacent trabecular bone density, existence of endplate defects, and subject's age were good predictors of local stiffness and strength applicable for con-CT. Predictive models by con-CT fitted for stiffness ($R^2 = 0.82$, $p < 0.001$) and strength ($R^2 = 0.74$). Conclusions: Vertebral stiffness and strength topography can be defined in-vivo using models based on quantitative analysis of micro-CT or conventional CT images.

Date: 2012-11-29
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Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 30987

COMPARATIVE RESULTS FOR MANAGEMENT OF DEGENERATIVE SPINAL STENOSIS. DECOMPRESSION AND FUSION VERSUS DECOMPRESSION AND COFLEX DYNAMIC STABILIZATION. MINIMUM 2-YEAR FOLLOW-UP

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METHODS: In a prospective comparison of Coflex dynamic stabilization vs. posterior lumbar fusion. Patient underwent one or two level decompression followed by placement of a Coflex Interlaminar implant matched to pedicle screw fixation with posterior lateral bone graft. Only patients with two years follow-up were included in this study. Follow up was completed at 6 weeks, 3 months, 6 months, and one and two years with physical exam, visual analogue scoring (VAS), Oswestry disability score (ODI), and radiographic analysis. **RESULTS:** 79 one level surgeries (47 Coflex and 32 Fusion) and 47 two level surgeries (21 Coflex and 26 Fusion). Average pre-op ODI in the Coflex group was 61.8 (range 40 to 70). Average pre-op ODI in the fusion group was 59 (range 42-72). Post-op ODI in the Coflex group was 25.87 (range 10-46). Post-op ODI in the fusion group was 31.8 (range 18-57). Pre-op VAS in the Coflex group was 8.5 (range 5-10), Average pre-op VAS in the fusion group was 7.35 (range 6-9). Post-op VAS in the Coflex group was 2.2 (range 0-6). Post-op VAS in the fusion group was 3.4 (range 1-6). **DISCUSSION:** Both the Coflex and the fusion groups demonstrated safety with no device related complications. Both groups showed statistical improvement in ODI and VAS at follow up with less complications and post-operative stay for coflex group. Short term results for coflex implantation after decompressive laminectomy in degenerative Lumbar spine provides similar clinical outcome in comparison with the instrumented fusion and is less invasive.

Date: 2012-11-29
Session: Spine: Degenerative II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 33186

LAMINAR FENESTRATION TECHNIQUE FOR THE TREATMENT OF THORACIC OSSIFIED LIGAMENTUM FLAVUM

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Introduction: Thoracic ossified ligamentum flavum (OLF) can cause myelopathy. Although some decompressive techniques have, until now, been introduced, the authors propose a less invasive technique for the decompression of the thoracic OLF. Material & Methods: Between July 2005 and November 2010, twenty seven levels of seventeen patients were treated with laminar fenestration technique for the decompression of the thoracic OLF. This technique creates a key-hole on lamina, preserving lower lamina bone, facet joint, and ligamentum flavum. Patient's outcome was analyzed using the Japanese Orthopedic Association (JOA) score and progression of kyphosis on simple X-ray. Results: All patients were successfully treated with laminar fenestration technique. There was one dural tear, but no neural complication or injury. Mean follow up duration was 18.3 months. Mean JOA score improved from 4.3 to 8.7. Additionally, there was no recurrence or progression of kyphotic deformity. Conclusion: Laminar fenestration technique for the treatment of thoracic OLF showed successful outcome with less complication. This technique can be an alternative minimally invasive surgical option for the treatment of thoracic OLF.

Date: 2012-11-29
Session: Spine: Degenerative II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 32569

THE NEW MINIMALLY INVASIVE LUMBAR FUSION – UNILATERAL PEDICLE AND SPINOUS PROCESS SYSTEM

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Purpose: We designed the new concept of minimally invasive lumbar fusion. We show its biomechanical data and clinical courses. Materials and Methods: Unilateral Pedicle and Spinous process System (UPSS) is a new means of spinal fusion. It consists of spinous process hook-and-rod system (Tadpole system®) and unilateral pedicle screw-and-rod system and cross link. The pedicle screw-and-rod system and cross link are available in CD Horizon (legacy® and Antares®) or Small Xia®. Biomechanical study indicated this fixation acquired stability similar to a bilateral Pedicle Screw fixation. It can fix strongly by unilateral approach and so muscles of opposite side can reserve perfectly. Bone grafts are available of posterior fusion, posterolateral fusion, inter vertebral body fusion and inter spinous process fusion. And furthermore in UPSS, we can perform pedicle bone graft of spinous process (modified-UPSS). We introduced this system into two lumbar burst fracture cases and two degenerative spondylolisthesis cases and one case of discogenic pain syndrome. Results: Good clinical courses were recognized. We considered basic UPSS was good with posterior fusion and posterolateral fusion cases, modified UPSS was good with inter vertebral body fusion cases and kissing spine cases. Conclusion: UPSS can become one standard choice of minimally invasive lumbar fusion.

Date: 2012-11-29
Session: Spine: Degenerative II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 32334

BMP COMBINED WITH AUTOGRAFT VS. AUTOGRAFT ALONE IN TREATMENT OF PSEUDOARTHROSIS AFTER FAILED POSTERIOR LUMBAR INTERBODY FUSION (PLIF) SURGERY

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Introduction: The efficacy of BMP in treating pseudoarthrosis after failed lumbar spine fusion surgery is not thoroughly investigated. This is a retrospective study of radiological evaluation of BMP combined with autograft in achieving solid bony fusion in treating pseudoarthrosis after (PLIF) compared to autograft alone. Methods: 133 patients with pseudoarthrosis after PLIF surgery were revised between November 2003 and October 2010 using BMP and autograft in Group A (no=64, Age 33-83 mean 60 ± 11.36) and autograft alone Group B (no=69, Age 40-77 mean 58 ± 15.35). The one year follow-up X-rays were judged by 2 independent viewers to evaluate the bony fusion. CT evaluation was limited for the cases that showed limited or no evidence of bony healing in a good quality X-rays. Results: Fusion rate in Group A was 89.06%; solid fusion was evident in 57 cases. No evidence of fusion was found in 7 cases. Fusion rate Group B was 84.05%; solid fusion was evident in 58 cases. 11 cases failed to fuse. The difference in the fusion rate between both groups was found to be statistically insignificant. Conclusion: using BMP-7 combined with autograft had successfully achieved a higher percentage of fusion rate in comparison to results of autograft alone. However these results were found to be statistically insignificant. A detailed analysis of the surgical application technique of BMP (ventral, posterior or minimally invasive) is to be studied.

Date: 2012-11-29
Session: Spine: Degenerative II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 32321

TWO-YEAR RESULTS OF AXIALIF MINIMALLY INVASIVE LUMBOSACRAL SPINAL FUSION

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Introduction: When conservative management fails, spinal fusion remains a good option for individuals suffering severe back pain due to degenerative lumbar disc pathology. The Axial Lumbar Interbody Fusion (Axia-LIF) approaches the lumbosacral junction via the pre-sacral space and is a truly muscle sparing, minimally-invasive fusion technique. Methods: Patients with confirmed discogenic lumbar back pain and imaging evidence of advanced degenerative disc disease were included in this study. Patients were asked to complete an Oswestry Disability Index (ODI) questionnaire preoperatively and at 6, 12 and 24 months post-operatively. We compared the reduction in disability in those who received percutaneous anterior stabilisation alone (Group A) and those who received supplementary posterior instrumentation (Group B). Results: 41 patients were included in the study (16 male; 25 female). Demographic details were comparable between the two groups with a median age of 46 years and similar preoperative median ODI scores. In the whole group, median ODI scores reduction was statistically significant. At 6 months, median ODI reduced from 54 to 38 ($p = 0.001$), which continued up to 24 months. Median ODI in Group A reduced from 56 to 38 at 24 months ($p=0.006$) and from 52 to 22 in Group B ($p=0.000$). Conclusions: This study confirms that based on the Oswestry Disability Index, patients undergoing Axia-LIF experienced a reduction in disability at 6, 12 and 24 months. The benefit, as evaluated by the ODI, continued beyond one year postoperatively with patients experiencing further reduction in ODI at 12 and 24 months.

Date: 2012-11-29
Session: Spine: Degenerative II
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 31919

SURGICAL OUTCOMES FOLLOWING SPINAL SURGERY FOR PATIENTS WITH HEMODIALYSIS

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Introduction: The purpose of this study is to review clinical outcomes, including survival rate and to discuss the potential benefit of surgical treatments for spinal disorders in patients treated with long-term hemodialysis (HD). Materials and Methods: We retrospectively reviewed 50 chronic HD patients who underwent 33 cervical and 17 lumbar spinal surgeries. According to the radiological findings, we divided them into the non-DSA and the DSA groups. In general, decompression only was performed for the non-DSA patients, whereas spinal fusion was added for the DSA patients. We analysed the following data respectively: sex, age, operative time, estimated blood loss (EBL), pre- and post-operative Japanese Orthopaedic Association (JOA) score and survival rate. Results: All patients improved neurologically and functionally following surgery. There were significant differences in the operative time between the DSA and non-DSA groups in patients with cervical spinal lesions, while in patients with lumbar spinal lesions, there were significant Surgery for Patients with Hemodialysis differences in gender, operative time, and EBL. Amyloid deposition was found significantly more commonly in DSA than in non-DSA patients and was associated with longer duration of HD. Eleven patients died within 49 months of the surgery due to HD-related complications, but there was no surgery-related morbidity. Kaplan-Meier analysis showed a trend towards decreased survival rate in non-DSA patients more than 40 months after the index surgery. Conclusions: Even in patients treated with long-term HD, spinal surgeries reliably obtain neurological and functional improvement if surgeons judge the preoperative inclusion criteria correctly.

Date: 2012-11-29
Session: Spine: Deformity I
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 32871

RETROSPECTIVE ANALYSIS OF SPLIT SPINAL CORD MALFORMATIONS – CASE SERIES AND REVIEW OF LITERATURE

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Introduction: Split Spinal cord malformations (SSCMs) are rare developmental anomalies in which the spinal cord is split over a portion of its length to form a double neural tube. We present a large single centre series of SSCM cases. Methods: 62 case notes and their imaging were analysed retrospectively from 1971 to 2011 with a mean follow-up of 21 years of being referred to our institute. Results: Bony spur was identified in 42 (67.7%) cases and therefore classified as type 1 (Pang). There was no statistical significant difference between the type of SSCM and the presence of scoliosis ($p=0.603$). Thirty three patients underwent neurosurgery, 29 had microsurgical excision of the bony/cartilaginous septum and 4 had intra-dural exploration. There was no statistical significant difference between the presence of scoliosis and incidence of neurosurgery ($p=0.246$). Twenty one patients had scoliosis surgery, 2 had lumbar spinal fusion, 1 cervical spinal fusion, 1 had trauma and 1 had X-stop dynamic spinal stabilisation. Recommendations: We recommend whole spine MR imaging in all cases of Idiopathic Scoliosis and a neurosurgical opinion in the presence of a split spinal cord to plan for its management. The septum (type 1 SSCM) often needs to be explored even in the absence of clinical signs of cord tethering (type 1 $n=15$ had deformity correction; 12/15 had microsurgery). In case of non-progressive neurological manifestations in type 2 SSCM, the spinal deformity may be corrected ($n=8$ type 2 had surgery) without neurosurgical intervention (5 out of 8 didn't require microsurgery).

Date: 2012-11-29
Session: Spine: Deformity I
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 30897

TREATMENT OF SPINAL DEFORMITY ASSOCIATED WITH MYELOMENINGOCELE IN YOUNG CHILDREN WITH USE OF THE 4 RIB CONSTRUCT

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Introduction: Surgery for myelomeningocele spinal deformity has rates of complications, including infection, pathological skin breakage, instrumentation failure, and neurological deterioration, that are among the highest of all deformity surgery. We therefore introduce a 4 rib construct associated with percutaneous technique in immature children with myelodysplasia with spinal deformity would correct deformity; allow growth; with minimal complications. Methods: Design of the study retrospective therapeutic case series grade 4. We reviewed the results of 4 patients operated using the 4 rib construct system in 2008, 2009. The mean age at the initial procedure was 70 months, mean followup time 31 months. Results: Mean preoperative thoracic scoliosis was 55 degrees, Thoracolumbar scoliosis 66.5, thoracolumbar kyphosis 85 degrees. Final mean postoperative followup measurement were 42 for thoracic scoliosis(24%), 20.5 for Thoracolumbar scoliosis(69%), 44.5 for thoracolumbar kyphosis(48%). 14 procedures were performed with no intraoperative complications. Post operative complications were 2 skin breakage distally, 1 iliac screw dislodgement, 1 shunt displacement. No proximal fixation dislodgement, no deep seated infection, no damage in the pathological skin were detected. Conclusion: We think that this 4 rib construct technique can be considered an alternative surgical option in treating myelomeningocele because it is: 1-Safe (minimal skin incisions with percutaneous rod placement, with minimal blood loss); 2-Low profile implants, less bulky and easy to construct with difficult deformities; 3-Effective in dealing with difficult deformity like kyphosis with good correction results with no need for anterior approach; 4-no dislodgement proximally.

Date: 2012-11-29
Session: Spine: Deformity I
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 32455

**CERVICAL PEDICLE SCREW FIXATION IN CHILDREN IN THE
MANAGEMENT OF COMPLEX CERVICAL DEFORMITIES**

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Introduction: Paediatric Cervical Pedicle Screw (CPS) fixation has not been described previously in the literature. We describe the application and safety of Iso-C navigation guided pedicle screws in 15 complex paediatric cervical deformities with congenital anomalies and various anatomical variations. Methods: 47 pedicle screws were used in 15 children of mean age 9.7 ± 2.5 years (range: 3 - 13) who required spinal stabilization for crano-vertebral junction anomalies (n=9), cervico-thoracic kyphosis/ kyphoscoliosis (n=5) and cervical tumor excision (n=1). Iso-C 3 D intraoperative navigation was used in all patients. Standard 3.5 mm titanium polyaxial pedicle screws were inserted and the containment was post operatively evaluated with CT scans. Results: Iso-C navigation was found to provide excellent virtual imaging and navigation control in all patients. Cervical pedicle screws were successfully inserted in all the 47 planned levels. Forty-one (87.2 %) screws were fully contained and only six (12.8 %) had a non-critical breach. None of them had a critical breach. At an average follow up of 16.1 ± 12.6 months, no loss of correction or implant failure was observed. Conclusion: This is the first study in the literature reporting the use of pedicle screw fixation in paediatric age group. The results show that this technique can be utilized effectively in children also. The use of Iso-C 3D navigation provides real time virtual imaging and improves the accuracy and safety of the technique.

Date: 2012-11-29
Session: Spine: Deformity I
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 32729

ACCURACY AND SAFETY OF INSERTION OF PEDICLE SCREWS USING THE O-ARM IN PEDIATRIC SPINAL DEFORMITY SURGERY

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Introduction: The aim of this study was (1) to determine if the use of the O-Arm is associated with more accurate screw placement during posterior spinal surgery, and (2) to determine the time of the surgical procedure and radiation amount received as it differs between the free hand and real time technique. Methods: We retrospectively reviewed the records of 84 patients on whom the O-arm was used from 2007-2011 for posterior spinal surgery using thoracic and lumbar screws. Patients were divided into either the non real time group (NRTG) freehand technique (n=42) or the real time group (RTG) navigation technique (n=42). Results: In the NRTG, 16.7% required 1 screw change, and 40.5% required 2+ changes. A signal decrease in one case resolved after repositioning of a pedicle screw. In the RTG, 11.9% required 1 screw change, and 4.8% required 2+ changes. Less screws required replacement in the RTG (9 vs. 57; $p < 0.0001$). The O-arm was used more frequently within the RTG (1.8 vs. 1, $p < 0.0001$). Surgical time was longer within the RTG (334.90 vs. 287.79 min, $p=0.025$). The number of CT spins within the RTG per patient was higher (3.32 vs. 1.77, $p<0.0001$). The amount of radiation received per patient was higher in the RTG (57.08 vs. 35.30 mGy, $p<0.0001$). Conclusion: The NRTG is faster, with less exposure to radiation. The RTG required fewer screw changes, but increased surgical time, and radiation exposure. Both techniques serve as excellent learning and teaching tools in pedicle screw placement.

Date: 2012-11-29
Session: Spine: Deformity I
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 32727

HIGH-GRADE SPONDYLOLISTHESIS IN CHILDREN: IS IT SAFE TO PURSUE AN ANATOMIC REDUCTION?

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Introduction: The purpose of this study is to compare the outcomes of 3 different surgical treatments for high-grade spondylolisthesis. **Methods:** We retrospectively reviewed 28 cases of high-grade spondylolisthesis treated surgically over 20 years. Patients were divided into 3 groups: in-situ arthrodesis (n=8); arthrodesis with intraoperative reduction and posterior instrumentation (n=7); and arthrodesis with intraoperative reduction, wide nerve root decompression, sacroplasty, and posterior instrumentation with anterior column support (four step procedure; n=13). The mean follow-up was 38 months (range 12 to 110 months). **Results:** Patients in group 3 experienced a significant improvement in slip percentage (82.5% to 52%; $p = 0.0026$), slip angle (44.3 degrees to 24.9 degrees; $p < 0.0001$), and sagittal pelvic balance from the pre-operative period to last follow-up. Patients in group 3 had a lower rate of pain and better mean slip percentage, slip angle, and sagittal pelvic balance at latest follow-up (Table 1). In group 1, 75% of cases fused, 2 patients required revision surgery, and 1 had a neurologic deficit, which resolved. In group 2, 83% of cases fused and 1 patient required revision surgery. There was also an asymptomatic screw fracture and a single neurologic deficit (resolved). In group 3, 92% of cases fused, 1 patient required revision, and 1 had a persistent neurologic deficit. **Conclusions:** Children treated with a four step procedure for high-grade spondylolisthesis achieved the best deformity correction and lowest rate of pain at latest follow-up. The four-step procedure may help avoid deformity progression and achieve solid fusion.

Date: 2012-11-29
Session: Spine: Deformity I
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 32017

MANAGEMENT OF SPONDYLOLISTHESIS GRADE II AND III BY PEDICULAR SCREW: A STUDY IN 28 CASES.

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Introduction: Spondylolisthesis, leads to chronic-pain, depression. Many methods of management tried. Success of management depends on reduction of pain, prevention of slip, stabilization of spine, prevention and reversal of neurodeficit. Of available methods, like decompression without fusion, decompression with posterior lateral fusion, and decompression with instrumented fusion, the last modality is chosen. Aim of this study is to evaluate the method of stabilization of spine by Pedicular screw fixation in grade-II and grade-III listhesis after reduction. Materials and Methods: In this study, 28 patients, 22 male, 6 female, between 22-62 years included. Laminectomy decompression, posterolateral fusion and spinal stabilization were done by pedicular screws and rods, by posterior approach in all cases. Reduction of listhesis done before stabilization. Epidural analgesia for 72 hours. Sit up with support from second day. LMWH for a week. Ambulations after 2 weeks. Patient discharged after removal of stitches at two weeks. Cases followed up, with clinical and radiological assessment, pain-relief, deformity and neurological status at 6 weeks, 6 months, 1 year. Results: Moderate to excellent pain relief (vas>4) in 16 patients where reduction was satisfactory. Mild to moderate pain relief (Vas>4) requiring analgesics in 11 patients. None of patients deteriorated neurologically, neither had complication like deformity except one developed paraparesis which was recovered after 3 months. Result analysis showed that pain relief and improve neurological status is directly related to degree and percentage of reduction in listhesis before stabilization. Conclusion: Operative treatment by decompression, fusion, instrumental stabilization offers good results for spondylolisthesis grade-II and III. But reduction before stabilization yields more fusion rate and functional outcome.

Date: 2012-11-29
Session: Spine: Deformity I
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 32426

THE POSTURE CLINICAL TYPES AT PATIENTS WITH IDIOPATHIC SCOLIOSIS

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The aim was to research idiopathic scoliosis (IS) posture features to determine its clinical types which illustrate given pathology and reflect its development character. Materials and methods: 2006 patients 4-20 y.o. with IS were analyzed. Spine deformities with an arch angle to 10° by Cobb were defined in 303(15,1%) cases, with an arch angle 11° – 25° - in 327(16,3%), 26° – 40° – in 645(32,1%) and more than 41° – in 731(36,5%). By the deformity basic arches anatomical location the lumbar type was established at 138(6,8%) patients, thoracic - at 691(34,5%), thoraco-lumbar - at 660(32,9%), combined - at 497(24,9%), upper thoracic - at 20(0,9%). The posture was investigated by the clinical survey method where the vertical frontal trunk steadiness condition as an estimation criterion was used. Results: Three types of the posture were defined. The first type - an imbalanced mobile posture; it is characteristic for the IS initial stages. The second type - the pseudo-balanced fixed posture; revealed by the expense of compensatory inverse arches to provide external trunk balance stability. The third type - the imbalanced fixed posture; it accompanies IS active progress, showing further backbone anatomo-biomechanical fastness deterioration on structural level. The allocated types of the posture showed their interrelation, reflecting dynamics and possible pathology progress. The given posture types are expedient for considering at IS diagnosis and dynamic observation over patients as a clinical sign which reflects implication and IS deformity expression, and also orthopaedic treatment efficiency.

Date: 2012-11-29
Session: Spine: Deformity I
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 31267

APICAL DEROTATION FOR THE DEFORMITY CORRECTION IN ADOLESCENT IDIOPATHIC SCOLIOSIS USING PEDICLE SCREWS PLATE SPINAL SYSTEM: THE SURGICAL TECHNIQUE AND RESULTS

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The treatment of adolescent idiopathic scoliosis (AIS) has evolved substantially over the last decades. Cotrel-Dubousste spinal system demonstrated the excellent in coronal and sagittal deformity correction but remained inferior in rotational deformity control. Evolution of the pedicle screws in modern spinal instrument systems provide the three columns fixation and allow the true rotational correction of the vertebral body by direct manipulation. However, the screws can be cutting out which can cause disastrous consequences. Since 1990 the pedicle screw plate system (PSP) has been developed and used for the treatment of AIS. With our technique, indirect manipulation of the spinal deformity results in the gradual curve correction and the apical vertebral derotation as well. Our results are comparable to the direct derotation techniques that have been reported previously. In this article, our surgical planning and the surgical technique applied to our PSP system will be demonstrated and the clinical results will be presented.

Date: 2012-11-29
Session: Spine: Deformity I
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 30831

SEGMENTAL PEDICLE SCREW FIXATION WITH CONVEX DIRECT VERTEBRAL ROTATION FOR CORRECTION OF ADOLESCENT IDIOPATHIC SCOLIOSIS

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Background: Objective is to analyze the efficiency and safety of a novel construct in deformity correction using direct vertebra rotation (DVR) of convex apical pedicle screws. Methods: Twenty-three patients with major right thoracic curves underwent posterior spinal fusion (PSF) and instrumentation using apical convex only pedicle screws. Twelve patients had a minimum two-year follow-up. Average age was 13.6 +/- 1.76. Rotational correction assessed using CT and the Perdriolle method. Plain films were evaluated for coronal and sagittal Cobb angles, and global sagittal balance (GSB) pre-operatively, post-operatively and at two-year follow-up. Results: Initial mean major thoracic Cobb measurement pre-operatively was 51.2 +/- 7.53 versus 17.4 +/- 7.3 post-operatively ($p < .0001$). Rotational measurement was 23 +/- 8.3 pre-operatively versus 13.6 +/- 7.1 post-operatively ($p < .0001$). At follow-up, major thoracic curve correction was maintained at 24 +/- 7.8. GSB was not significantly different at two years. Level of Evidence: Level II Study. Retrospective two-year follow-up study of patients undergoing posterior spinal fusion for right thoracic convex adolescent scoliosis using only pedicle screw construct. Custom dictates initial concave rod placement in surgical management of scoliosis. Pedicle screws placed in the concavity risk aorta impingement laterally, spinal cord medially, and encounter smaller, more variable pedicles. Apex convex pedicle screws mitigate their risks and may achieve equivalent deformity correction. Clinical Relevance: Apical convex only pedicle screws provide equivalent intermediate term correction while minimizing risk to vascular and neurologic structures.

Date: 2012-11-29
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Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 31618

LONG TERM RESULTS OF SCHEUERMANN'S KYPHOSIS CORRECTION BY MULTIPLE POSTERIOR PONTE OSTEOTOMIES AND ALL PEDICLE SCREW CONSTRUCTS

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Introduction: Scheuermann's kyphosis has been treated by a two staged fusion and instrumentation with a hybrid construct using hooks, pedicle screws and sublaminar wires. This study is to compare the long term results of multiple level Ponte Osteotomies with segmental all pedicle screw constructs versus two staged correction using hybrid instrumentation in the management of Scheuermann's Kyphosis. Methods: This multicenter study included 24 patients who underwent a single stage correction by segmental all pedicle screw constructs and multiple level Ponte Osteotomies (Group 1) and 21 who underwent a two staged anterior fusion and posterior instrumentation with a hybrid construct including hooks, pedicle screws and sublaminar wires (Group 2). The average preoperative dorsal kyphosis was 89.2 degrees (Group 1) and 81.3 degrees (Group 2). Results: Both groups were followed for a minimum of 5 y (range 5 - 8y). Group 1 had better correction with an average of 71% compared to 63% in Group 2 and 1.8% correction loss at final follow-up compared to 2.3% at Group 2. At final follow up, the SRS-30 questionnaire in Group 1 averaged 130 and in Group 2 averaged 118. The occurrence of junctional kyphosis was more in Group 1 (4/24) compared to Group 2 (2/21), yet none required extension of instrumentation. Conclusions: The use of multiple level Ponte Osteotomies and all pedicle screw constructs allowed good correction of the deformity which was maintained at 5 years' follow up.

Date: 2012-11-29
Session: Spine: Deformity I
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 31289

THE 4 RIB CONSTRUCT FOR SEVERE EARLY ONSET THORACIC KYPHOSIS

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Introduction: Current standard methods (VEPTR, Growing Rods) are not reliable for treatment of thoracic kyphosis. We present results of an alternate method for management of thoracic kyphosis, using bilateral hook fixation on ribs 2-5, which allows cantilever correction of kyphosis. Methods: 7 patients with thoracic kyphosis who underwent rib construct fixation were studied. Average age at initial surgery 10+1, range 8+2-13. Diagnoses included VATER and Coffin-Siris syndromes, spastic quadriplegia, neurofibromatosis, juvenile osteoporosis, and an unidentified syndrome. Results: Minimum followup 18 months, maximum 51 months. Results: preop scoliosis 98 (degrees), postop 55. Preop thoracic kyphosis 110, postop 75. 3 cases with >100 degrees initial kyphosis and >36 months followup had documented osteoporosis. Complications included 2 superior hook displacement, 1 delayed wound infection with removal of instrumentation with subsequent replacement, and 1 death of ventilator dependent patient at 33 mos postop. There was no proximal junctional kyphosis. Conclusion: Documented advantages of the rib construct over current standard methods include: 1) minimal neurologic risk, as distraction is not necessary for kyphosis correction, and gentle compression of rib hooks reduces kyphogenic effect, 2) reliable correction of >100 degree kyphosis without anterior release, 3) ability to correct coronal plane malalignment by manipulation of the construct, 4) improved alignment of previously fused thoracic spine without osteotomy, and 5) osteoporosis is not a contraindication to instrumentation with the rib construct.

Date: 2012-11-29
Session: Spine: Deformity II
Time: 17:00 - 18:30
Room: Maktoum B

Abstract no.: 32986

THE USE OF SOMATOSENSORY EVOKED POTENTIAL (SSEP) MONITORING TO REDUCE NEUROLOGICAL HARM IN SPINAL DEFORMITY SURGERY: A FIVE-YEAR INSTITUTIONAL REVIEW OF 2386 CONSECUTIVE CASES

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Introduction: We presented work at the SICOT Annual Congress 2011 from 2953 spinal surgery cases involving SSEP monitoring. This work found no statistical difference in neurological outcome when surgeons responded to abnormal monitoring. We have extended the cohort by a year and have focused just on spinal deformity patients who are often young and particularly vulnerable to neurological injury. Methods: 2386 consecutive spinal deformity operations (F:1719, M:667 median age 16yrs) were performed at our institution between 31st October to 1st March 2010. Significant trace abnormality ('red alert') was defined as a decrease in signal amplitude of 50% or a 10% increase in latency. Statistical analysis included sensitivity, specificity, positive predictive value and negative predictive value. A chi-squared test ($p < 0.05$) was performed to determine if surgeon's intervention influenced neurological outcome. Results: 72 (3%) operations recorded a significant trace abnormality and 7 patients (0.3%) sustained a lasting neurological deficit. Timing of significant trace change and intervention taken are presented. Sensitivity (100%), specificity (97.4%), PPV (14%), NPV (100%). The chi-squared test achieved significance ($p = 0.016$) suggesting that surgeon's intervention has a beneficial effect on neurological outcome. CONCLUSION: Triggering events are uncommon (3%) and the development of a persistent neurological deficit is rare (0.3%). Abnormal monitoring prompts a corrective reaction in most cases and resulted in prevention of neurological harm in 90% of those with a red alert. These are distressing events for patients, families and surgeons alike and we would advocate the use of SSEP monitoring in all patients undergoing spinal deformity surgery.

Date: 2012-11-29
Session: Spine: Deformity II
Time: 17:00 - 18:30
Room: Maktoum B

Abstract no.: 32958

RESULTS OF CORRECTIVE OSTEOTOMY IN ANKYLOSING SPONDYLITIS WITH FIXED KYPHOTIC DEFORMITY

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Summary: We retrospectively analyzed ankylosing spondylitis patients with fixed kyphotic deformity who underwent corrective osteotomy and report the results focusing on technical aspects, correction obtained, clinical outcomes and complications. Methods: We retrospectively analyzed ankylosing spondylitis patients who underwent corrective osteotomy between 1996 and 2009. Radiographic assessments included the sagittal vertical axis (SVA), correction angle, thoracic kyphosis, lumbar lordosis and occipito-cervical range of motion (OCROM). Clinical outcomes were assessed by SF-36 and Oswestry Disability Index (ODI) scores. Results: A total 292 corrective osteotomies were performed in 248 patients with a mean follow-up of 40.1 months (range, 24-104 months). There were 183 cases of single pedicle subtraction osteotomy(PSO), 19 cases of multiple Smith-Peterson osteotomy(SPO), 17 cases of PSO+SPO, 14 cases of single SPO, 6 cases of posterior vertebral column resection(PVCR) and 5 cases of PSO + partial pedicle subtraction osteotomy(PPSO) and 4 cases of PPSO. Mean difference of SVA before and after surgery were 87.3 ± 25.1 mm in PSO, 43.9 ± 19.4 mm in SPO, 90.7 ± 27.8 mm in PVCR and 57.3 ± 21.5 mm in PPSO. Mean correction angle were $31.9^\circ\pm 11.7^\circ$ in PSO, $14.3^\circ\pm 8.4^\circ$ in SPO, $38.3^\circ\pm 12.7^\circ$ in PVCR, $19.3^\circ\pm 7.1^\circ$ in PPSO. Outcome analysis showed a significant improvement in overall SF-36 and Oswestry score ($p<0.005$). Statistical analysis revealed that SF-36 and Oswestry score improvements correlated significantly with the postoperative SVA and OCROM($p<0.005$). There were 38 surgery-related complications in 25 patients (10.1%). Conclusion: Clinical outcomes according to the SF-36 and Oswestry scores were generally favourable. Postoperative SVA and OCROM were important factors to determine outcomes.

Date: 2012-11-29
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Room: Maktoum B

Abstract no.: 31209

UNSTABLE THORACO LUMBAR BURST FRACTURES

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Background: Unstable thoraco lumbar burst fractures with a neurological deficit need operative fixation for which three approaches have been described namely anterior, posterior and combined anterior & posterior. Posterior short segment fixation alone is often unable to support the anterior column of spine resulting in pedicle screw failure. Combined anterior and posterior fixation is an extensive time consuming procedure associated with increased blood loss and morbidity. Short segment posterior fixation with shortening osteotomy is a novel technique in which stabilization of anterior and posterior columns of the spine can be carried out by the posterior approach only. It decompresses the dura globally and provides a direct bone on bone compression of the vertebral bodies enhancing stability and early fusion. Materials & Methods: Ten patients with thoracolumbar burst fractures were admitted & evaluated for 1)Neurological status, ASIA grade & JOA score, 2)Kyphotic angle on radiographs of Dorsolumbar Spine, 3)CT scan for McCormack score, and 4)MRI to evaluate compression on neural structures. These patients were then taken up for shortening osteotomy surgery and evaluated post op at 2,6,12 & 24 weeks for improvement in above parameters and CT evidence of bony fusion. Results: There was improvement in JOA score & correction of kyphotic angle in immediate post op period. CT scan showed bone to bone fusion in 3 months. Conclusions: Shortening osteotomy can achieve the stability of all three columns of spine via posterior approach only. It decreases morbidity, operative time, blood loss and thus may take the place of conventional operations.

Date: 2012-11-29
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Time: 17:00 - 18:30
Room: Maktoum B

Abstract no.: 32313

VALUE OF THE PLIF TECHNIQUE AS AN ALTERNATIVE FOR PELVIC FIXATION IN THE CORRECTION OF RIGID NEUROMUSCULAR (NM) SCOLIOSIS

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Introduction: We present a new concept for the correction of rigid NM Scoliosis using fusion down to S1 with an additional release in PLIF technique as an alternative to pelvic fixation. Methods: Between 3/1999 & 12/2009, 73 Patients with NM scoliosis underwent posterior correction down to S1. In 42 patients (Group A) an additional anterior lumbar release in PLIF technique was undertaken on the lower lumbar segment, mean age 15.8 ± 4.1 . The mean pre-op. lumbar curve (LC) Cobb angle was $87.9^\circ \pm 18.8$, the mean flexibility of the curve was $32.9\% \pm 14.1$, mean (PO) angle $39.2^\circ \pm 10.3$. (Group B) 31 patients without PLIF, mean age 16 ± 4.9 , the mean pre-op. (LC) Cobb angle was $93.2^\circ \pm 20.4$, the mean flexibility of the curve was $27.8\% \pm 16$, mean Pelvic Obliquity (PO) angle $38^\circ \pm 10.7$. There was no significant statistical difference regarding age, curve magnitude, flexibility or (PO). Results: The mean follow-up period was 53 Months. The mean postoperative (LC) angle in Group A was $26.1^\circ \pm 15.19$ & Group B was $44.6^\circ \pm 15.09$. The mean postop. (PO) angle in gp A was $8.38^\circ \pm 7.33$ in gp B $17.09^\circ \pm 8.72$. The difference between the 2 Groups is statistically significant. At the last follow-up, the mean loss of lumbar correction in gp A was $0.89\% \pm 5.9$ & in gp B was $4.22\% \pm 6.74$, the difference between the 2 groups was statistically significant. The mean loss of (PO) correction in gp A was $1.02\% \pm 3.9$ & in gp B was $4.06\% \pm 5.27$, this difference was statistically significant. This new technique was proved to achieve better correction of the scoliosis deformity and the PO as well.

Date: 2012-11-29
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Time: 17:00 - 18:30
Room: Maktoum B

Abstract no.: 32087

DISTAL ADDING ON PHENOMENON IN (LENKE 1 A) ADOLESCENT IDIOPATHIC SCOLIOSIS TREATED WITH PEDICLE SCREWS

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Introduction: Distal adding-on phenomenon (D.A.O.P.) is postoperative complication, characterized by progressive correction loss of the lumbar spine. It is accompanied by unsatisfactory clinical outcome, high risk reoperation. Objective: identify risk factors, define surgical strategies. Material and Methods: Retrospective radiological review of 63 cases Lenke 1 A, follow up (1/6). Age, Risser's sign, curve degree, relationship between lower instrumented vertebra (L.I.V) with end vertebra (E.V.), stable vertebra (S.V.) and distance vertebra (D.V.) (first cephalad vertebra from sacrum whose deviation from CSVL >10 mm). Mann-Whitney test for continuous variables and X² /Fisher exact test for categorical variables were used to identify risk factors. Results: 12 boys, 14'6 years, preoperative curve 61'4° (46°/98°), postoperative 19'7° (0°/38°), 66'7 % correction. 55 cases (87'3%) without D.A.O.P.: 27 Risser 4, 22 Risser 5 (89.1%). Relationship L.I.V.: 34 one level distal E.V. (+1), 16 two levels E.V. (+2); 37 one level proximal S.V. (-1), 10 two levels S.V. (-2); 48 same level D.V. (+0), 8 one level proximal D.V. (-1). 8 cases (12'7%) with D.A.O.P.: 2 Risser 0, 2 Risser 1 (50%). Relationship L.I.V. : 4 same level E.V.(+0), 4 one level distal E.V.(+1); 5 two levels proximal S.V.(-2), 3 one level S.V. (-1); 5 one level proximal D.V. (-1), 3 same level D.V. (+0). There was statistically association between L.I.V and E.V. +0 (p=0.002), S.V. -2 (p=0.006), D.V. -1 (p=0.001) and Risser 0/1 (p=0.014) Conclusion: Surgical Strategy Lenke 1 A: L.I.V.: D.

Date: 2012-11-29

Session: Spine: Deformity II

Time: 17:00 - 18:30

Room: Maktoum B

Abstract no.: 31863

SPINAL SURGERY FOR ELDERLY PATIENTS OVER 80 YEARS OLD

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Introduction The aim of this study is to review our perioperative management including the surgical outcomes, complications. **Materials and Methods** Out of the 874 cases of spinal surgery in our institution during the 5-year period from 2006 to 2010, we reviewed consecutive 72 patients over 80 years old. Thirty four patients with cervical disease (CD), 38 patients with lumbar disease (LD). In CD patients, 32 patients underwent Laminoplasty and only two patients required posterior fusion. In LD patients, 29 patients underwent decompression and nine patients required posterior fusion. We retrospectively investigated preoperative medical conditions (PMC), operation time (OT), estimated blood loss (EBL), and perioperative complications. To evaluate their surgical outcomes, Japanese Orthopaedic Association (JOA) scores, and its improvement ratio were used. **Results** Hypertension in 40, diabetes mellitus in 23, cardiac disease in 14, and cerebral infarction in 6 patients were found preoperatively. A significant increase of both mean OT and EBL were found in patients required for posterior fusion (OT, 331 minutes; EBL, 654ml) compared with those in other patients (OT, 175 minutes; EBL, 147ml). Improvement ratio of JOA score was 29.5% (8.0 to 10.7 pts) in CD patients, 49.6% (9.6 to 19.2 pts) in LD patients. Postoperative delirium was found in 15 patients (20.5%). Improvement ratio in the patients with postoperative delirium (30.3%) was significantly lower than those without delirium (40.6%). **Conclusion** Although surgical outcomes are expected even in elderly patients, we have to pay attentions to reduce risk factors for postoperative delirium.

Date: 2012-11-29
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Room: Maktoum B

Abstract no.: 31632

SINGLE STAGE VERTEBRAL COLUMN RESECTION (VCR) OF HEMIVERTEBRAE IN CHILDREN UNDER THE AGE OF 10 YEARS

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Introduction: A single lumbar hemivertebra can result in a progressive spinal deformity with devastating consequences. Total resection of these hemivertebrae is ideal for correcting these deformities and several alternatives were suggested including anterior and/or posterior approaches. The aim of this study is to evaluate the clinical and radiographic outcome of single stage VCR in children less than 10y. **Methods:** The study included 31 patients with a lumbar hemivertebra with an average age of 8y. Vertebral Column Resection (VCR) involved laminectomy, excision of the pedicle and hemivertebra, and curettage of both end plates; the gap created was filled with morselized cancellous bone. Short segment posterior instrumentation was performed; the gap was gently closed by compression over the pedicle screws and the remaining autograft bone was placed in the posterolateral gutter. **Results:** Patients were followed-up for an average of 5.5y. The operative time had an average of 235min and the average blood loss was 470cc. The scoliotic deformity corrected from an average of 43 degrees to an average of 4 degrees postoperatively and an average of 6 degrees at final follow up; kyphosis corrected from an average of 34 degrees to an average of 5 degrees postoperatively and an average of 7 degrees at final follow up. There were no vascular injuries, neurologic insult, implant failure or crank shafting. **Conclusion:** Single stage posterior VCR with short segment pedicle screw instrumentation is a safe, efficient alternative that offers excellent correction in both sagittal and coronal planes without the need for anterior surgery.

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Abstract no.: 31621

SIMULTANEOUS ANTERIOR DEBRIDEMENT AND POSTERIOR INSTRUMENTATION FOR MULTIPLE LEVEL TUBERCULOUS SPONDYLODISCITIS

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Introduction: The incidence of tuberculosis has rapidly increased in the last decade. The aim of this work is to compare the results of iliac crest and rib grafts and to assess the role of short segment posterior instrumentation in patients with multiple level affections. **Methods:** The results of 48 patients with multiple level resistant tuberculous spondylodiscitis surgically treated were retrospectively reviewed. Patients were followed-up for an average of 6.5y. The average age was 47y and 27 patients had an associated neurologic deficit. The disease affected two levels (36 patients) and three levels (12 patients). All had anterior debridement and bone grafting by iliac crest autograft in 26 patients (Group 1) and rib autograft in 22 patients (Group 2); followed simultaneously by posterior short segment instrumentation. **Results:** Postoperatively, the kyphotic deformity was corrected from an average of 41 degrees to an average of 5 degrees (Group 1) and from an average of 47 degrees to an average of 6 degrees (Group 2). At the last follow up, both groups had a similar fusion rate (95% and 96% respectively) and loss of correction (averaged 2.4 degrees and 2.1 degrees respectively). Group 1 patients had 7 donor site complications. All patients except one had an improvement in their neurologic status. **Conclusions:** Radical anterior debridement of multiple level spondylodiscitis eradicated the infection; short segment posterior instrumentation applied immediate stability, allowed adequate graft uptake and long term correction of the kyphotic deformities.

Date: 2012-11-29
Session: Spine: Deformity II
Time: 17:00 - 18:30
Room: Maktoum B

Abstract no.: 31371

LUMBAR FIXATION FOR THE SURGICAL MANAGEMENT IN FLACCID NEUROMUSCULAR SCOLIOSIS

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Introduction: This retrospective study evaluates the clinical and radiographic result of flaccid neuromuscular scoliosis (F.N.S.) to determine whether pedicle screws fixation to L.4/L.5 achieves adequate scoliosis and pelvic obliquity correction. Methods: Surgical records of 42 cases (F.N.S.) were retrospectively reviewed. 37 had fixation to L.5 and 5 to L.4. In all cases pedicle screws were used. Results: The mean follow up was 3 years (range 2-7 years). The mean operative time was 4 hours (range 3-6 hours), the mean operative blood utilization was 3 units (2-7), and the average hospital length of stay was 17 days (range 8-39). There were 25 D.M., 10 S.M.A. type II and 7 cases of different types of neuropathy. At the time of surgery, mean age was 13 years (range 11-17 years). Scoliosis was lumbar in 4 cases, thoraco-lumbar in 22 cases, thoracic in 6 case and double in 3 cases. The mean preoperative Cobb angle was 65°, 66° and 77° (thoracic, lumbar and thoraco-lumbar), 25 patients had thoraco-lumbar junctional kyphosis (mean 41°) and preoperative pelvic obliquity (P.O.) was 16° (range 0°-38°). The mean postoperative Cobb angle measured 20°, 23° and 22° with 34%, 64% and 70% of correction. Mean postoperative P.O. was 5° (range 0° to 22°), in 4 cases were over 10°. Complications: 2 patients had deep wound infection, 4 patients developed respiratory problems and one required tracheostomy. Conclusion: Pedicle screws fixation in treatment of flaccid neuromuscular scoliosis gives adequate solid correction of the pelvic obliquity when there is a stable L5/S1.

Date: 2012-11-29
Session: Spine: Deformity II
Time: 17:00 - 18:30
Room: Maktoum B

Abstract no.: 31742

LOWEST INSTRUMENTED VERTEBRA SELECTION FOR LENKE 5C SCOLIOSIS: A MINIMUM 2 YEAR RADIOGRAPHIC FOLLOW-UP

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Introduction: 5C curves are relatively rare in AIS, and few studies have focused on this type of AIS. Methods: We reviewed all the AIS cases surgically treated in an institution from 2002 through 2008. Standing posteroanterior (AP) and lateral digital radiographs were reviewed at four junctures: preoperative, immediate postoperative, 3-months- and 2-years postoperative. Results: 30 patients were included. The following results were observed: (1) From the perspectives of both Cobb angle and vertebral translation, significant correction was achieved; (2) The correction obtained by surgery was well retained in the postoperative period; (3) While preoperative spinal imbalance was common in this group of patients, the majority eventually attained balance at 2 years; (4) LIV selection was significantly correlated with the 2-year correction and balance. In the literature as well as in the current study, the overall preoperative LIV-CSVL distance is 28 mm and the overall preoperative LIV tilt is 25 degree. Conclusion: In Lenke 5C scoliosis, preoperative spinal imbalance is common, although the majority of patients attain balance at 2 years. Significant correction loss is not common in the postoperative period. LIV selection significantly correlates with 2-year correction and balance. A translation of 28 mm and a tilt of 25 degree may be used as a general criterion for selecting LIV.

Date: 2012-11-29
Session: Spine: Deformity II
Time: 17:00 - 18:30
Room: Maktoum B

Abstract no.: 31740

POSTOPERATIVE TRUNK SHIFT IN LENKE 1C SCOLIOSIS: WHAT CAUSES IT? HOW CAN IT BE PREVENTED?

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Introduction: When selective thoracic fusion is performed, postoperative trunk shift is a significant problem in the management of Lenke 1C scoliosis. Methods: We reviewed all the AIS cases surgically treated in our institution from 2002 through 2008. Eighteen radiographic parameters were chosen as potential risk factors. Both comparative and correlation analyses were performed. Those parameters which had shown highest correlation with the 2-year thoracic AV-CSVL distance were selected to form a linear regression model, by which the correlations were quantified. Results: 44 patients were included. The parameters which measured the pre-op position of LIV and ratio of MT: TL/L curve showed high correlation with the 2-year thoracic AV-CSVL distance. With regard to the parameters which measured the amount of correction obtained by surgery, only the correction of the thoracic AV-T1 distance showed low correlation. Among the eighteen parameters, pre-op LIV-LEV difference and ratio of MT: TL/L Cobb angle were selected to form a formula to help predict postoperative trunk shift. The formula was: 2-year thoracic AV-CSVL distance = $-26.6 + 22.7(\text{ratio of MT: TL/L Cobb angle}) - 3.9(\text{Pre-op LIV-LEV difference})$. The model $R^2=0.55$. Conclusion: Both LIV selection and ratio of MT: TL/L curve were found to be highly correlated with the onset of postoperative trunk shift in Lenke 1C scoliosis. Amount of correction obtained by surgery, however, did not seem to be an independent causative factor. Postoperative trunk shift is less likely to occur when selecting LEV as LIV and the ratio of MT: TL/L Cobb angle ≥ 1.2 .

Date: 2012-11-29
Session: Paediatrics: Clubfoot
Time: 08:30 - 10:00
Room: Maktoum C

Abstract no.: 31430

TRANSITION FROM SURGERY TO PONSETI IN THE MANAGEMENT OF IDIOPATHIC CLUB FOOT: 20 YEARS EXPERIENCE

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PURPOSE: Considering the Ponseti technique to replace our traditional treatment method, we conducted a retrospective study evaluating the clinical outcome of the two treatment methods. **METHODS :**In our study , we compared the results of two groups ; The 1st group included 312 operated feet (postero lateral and medial release) the minimum follow up was 5 years (range 5 -20 years) . The average age at surgery was 11 month (range 6-16 M) . The second group included 634 feet that was treated by ponseti method starting the 1st week of life, the minimum follow up was 2 years (range 2-8). **Results:** we used the international clubfoot study group rating system to evaluate our results. In the first group the excellent and good results accounted for 58% of the results, with a complication rate reaching 32%, which included Infection, under correction, overcorrection, AVN of the talus, skew foot, relapses and skin problems. In the 2nd group we had 91% excellent and good results and 9% of fair and poor results (mainly due to non- compliance). **Conclusion and significance:** the result of our study showed that the transition from surgery to ponseti in the management of idiopathic clubfoot improved the final outcome, this method proved to be easily implemented in underprivileged areas without the need of advanced medical facilities.

Date: 2012-11-29
Session: Paediatrics: Clubfoot
Time: 08:30 - 10:00
Room: Maktoum C

Abstract no.: 32769

PREDICTIVE FACTORS FOR PONSETI CLUBFOOT TECHNIQUE PRACTITIONERS IN NIGERIA

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Background: Traditionally, clubfoot has been treated by several months of manipulation with castings followed by surgical correction. This approach is very time consuming, expensive and many patients ended not accessing treatment with neglected clubfoot deformity. Aims: To determine effects of Ponseti methods on Nigerian clubfoot management and identify predictive factors for Ponseti practitioners poor outcome. Methods: Ponseti technique-trained practitioners were study subjects that gave informed written consent and currently treat clubfoot patients in Nigeria. The proposal was approved by institution ethical committee. All clubfoot patients who received at least a session of Ponseti manipulation and casting were included in the intention to treat non randomized hospital based study data. The clubfoot severity was assessed with Pirani's scoring. The alpha error of 0.05 and 95% Confidence interval were accepted and p value <0.05 taken significant. Results: 493 patients with 749 clubfeet (bilateral: 256 (51.9%); unilateral: 237(48.1%) were treated with Ponseti methods. Outcome shows 442 (89.7%) patients were treated successfully, and thirty-five patients' treatment failed (7.1%), and sixteen patients had significant surgery (3.2%, p<0.002). Twenty-five clubfoot clinics were established newly. Predictive factors for poor outcome depends on the mean age of oldest clubfoot patient treated (< 4years, p<0.010), low volume of clubfoot treated successfully (p<0.001) and high frequency of major clubfoot surgery performed (p<0.0001). Conclusion: Nigerian national clubfoot correction rate was over 90.0% and reduction of major clubfoot surgery was a paradigm shift to 3.0%. Predictive factors for poor outcome depend on learning curve of Ponseti technique practitioners.

Date: 2012-11-29
Session: Paediatrics: Clubfoot
Time: 08:30 - 10:00
Room: Maktoum C

Abstract no.: 32094

MOTOR ABILITIES OF CHILDREN WITH CLUBFEET AT PRIMARY SCHOOL. PERFORMANCE ON THE 10X5 METER SPRINT TEST AND THE STANDING LONG JUMP TEST

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Objective: The aim of this study is to investigate sprinting and jumping capabilities of children with clubfeet compared to children without. The second goal is to investigate the correlation between the jump and sprint capacity and their correlation with the Clubfoot Assessment Protocol (CAP). The third goal is to determine the difference in performance between uni- or bilateral clubfeet. Method: In this cross sectional study thirty-nine Dutch children with uni-or bilateral corrected clubfeet and no co-morbidity in the age of 6-12 years participated. They completed the 10x5 Meter Sprint Test and the Standing Long Jump (SLJ) Test. The functionality of the foot was measured with the CAP. For statistical analyses the independent t-test, the Mann-Witney U and the Spearman's Rho were used. Result: Children with clubfeet have a significant reduced jump ($p=.000$) and sprint ($p=.000$) capacity compared to normal children. There is also a significant correlation between de results on the 10x5 Meter Sprint test and the SLJ test. The correlation between the jump and sprint capacity and the Clubfoot Assessment Protocol (CAP) will be discussed. There is no significant difference in performance between uni-or bilateral clubfeet. Conclusion: Children with clubfeet have a reduced jump and sprint capacity compared to normal children of the same age.

Date: 2012-11-29
Session: Paediatrics: Clubfoot
Time: 08:30 - 10:00
Room: Maktoum C

Abstract no.: 32300

EVALUATION OF THE USE OF TIBIALIS ANTERIOR TENDON TRANSFER IN CONGENITAL TALIPES EQUINOVARUS

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The Ponseti method is well established for the treatment of congenital talipes equinovarus (CTEV). Tibialis anterior tendon transfer can be used to address muscular imbalance in feet that show early signs of relapse. Previous authors have reported performing tendon transfers in up to 40% of patients. Our unit has treated over 500 patients with CTEV who presented to us primarily or who were referred from other units after failed treatment (both Ponseti and surgical). Our study looked at the patients in our unit who underwent tibialis anterior tendon transfers (88 feet) with a view to identifying parameters that might predict a need for the procedure. We analysed the age of the patient at the time of surgery, preoperative Pirani scores and the need for achilles tenotomy or lengthening at the time of tendon transfer. 34% of cases treated were female with 47% of the transfers being bilateral. 30% of the cases had been treated in our unit as the first centre. Therefore less than 15% of the primary patients required tendon transfer after appropriate casting and tenotomy. We conclude that with the appropriate application of the Ponseti method of casting there can be a reduction in the rate of tendon transfer. The Pirani score may be useful in predicting the need for tibialis anterior transfer in the treatment of patients with CTEV.

Date: 2012-11-29
Session: Paediatrics: Clubfoot
Time: 08:30 - 10:00
Room: Maktoum C

Abstract no.: 32945

ULTRASNOGRAPHIC MONITORING IN THE TREATMENT OF CONGENITAL CLUBFOOT IN INFANTS

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Introduction: Anatomical ultrasound examination of foot in prenatal, neonatal and postnatal periods allowed us to evaluate objectively cartilagenous and soft tissue components and the foot vessels. Material and methods: 186 children with congenital clubfoot aged from 1 month to 1.5 years were examined by devices Philips HDI 5000, Simens Sonolain G60 S, Acuson, linear multifrequency probe with a frequency of 5-10MHz. The study was conducted in three standard planes proposed by Aurell. Results: The study of the foot in the medial plane was accompanied by qualitative and quantitative assessment of malleolus medialis, talus, naviculare, cuneiformia mediale, of relations of talus-naviculare, naviculare-cuneiformia, first wedge-shaped phalanx joints. Distance between malleolus medialis and naviculare in all cases was reduced up to 2-3,1 mm and has accompanied by navicular medial shift in relation to the head of the talus and subluxation. In 65 percent of severe clubfoot, marked skewness of the distal articular surface of medial cuneiform bone laterally with sharp contours, homogeneous structure was noted. We evaluated this as manifestation of dysplastic changes in the medial cuneiform. In additional medial-plantar plane in 65 percent was identified a fixation of main portion of the tendon m.tibialis anterior to the plantar surface of a first metatarsal bone and to the distal os cuneiforme mediale. In the dorsal plane, flattening of head and shortening of neck of the talus were observed. It is possible to detect a falsy correction. In Doppler examination of vessels, a decrease in function of autoregulatory processes was revealed.

Date: 2012-11-29
Session: Paediatrics: Clubfoot
Time: 08:30 - 10:00
Room: Maktoum C

Abstract no.: 30823

MANAGEMENT OF NEGLECTED CTEV BY PONSETI TECHNIQUE

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The Ponseti method of treating clubfoot has been shown to be effective in young children. However, it is not established yet, whether it is successful in older children, who presented after walking age. We prospectively reviewed 28 children (37 feet) with congenital talipes equino varus who presented after walking age and had undergone no previous treatment, ie, after 1 year of age all were treated by the method described by Ponseti with some minor modifications. Assessment of patients was done by clinical photographs, Pirani scoring, and measurement of talocalcaneal index. The mean age at presentation was 15.8 months (12 to 30 months). The mean time of immobilization in a cast was 6 months (3 months to 8 months). A painless plantigrade foot was obtained in all 37 feet without the need of extensive soft tissue release and/or bony procedures. 6 patients had plaster sore, treated by local antiseptic and oral antibiotics. Failure was seen in 3 patients who had recurrent equinus deformity, who required second tenotomy. We conclude that the Ponseti method is a safe, effective and low cost treatment for neglected idiopathic clubfoot presenting after walking age.

Date: 2012-11-29
Session: Paediatrics: Clubfoot
Time: 08:30 - 10:00
Room: Maktoum C

Abstract no.: 31515

COMBINED APPROACH TO MANAGEMENT OF RELAPSED CLUBFOOT

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Aim: to minimize surgical intervention in the cases of relapsed clubfoot in younger children. **Materials and methods:** in 26 children (50 feet) aged from 2 to 6 years old with relapsed clubfoot Ponseti casting with following surgery using original method (Klychkova) for correction of residual forefoot deformity. **Results and discussion:** In many cases of relapses in children with clubfoot the origin of the relapse can be addressed to inadequate primary management and orthotic compliance. Anatomic features of relapsed deformity include abnormal relations in Chopard and Lisfranc joints as well as secondary deformity of first cuneiform bone and abnormality of anterior tibial muscle insertion. Serial casting with Ponseti principles gave us the possibility to restore talo-calcaneal relations and Chopard joint alignment in most of the cases. Residual forefoot adduction was improved by surgical realignment of the first cuneiform bone and reattachment of anterior tibial muscle into first intercuneiform space. **Conclusion:** Serial casting in accordance to Ponseti principles gives the possibility to minimize surgical procedure in the cases of relapsed clubfoot in children aged from 2 to 6 years old.

Date: 2012-11-29
Session: Paediatrics: Clubfoot
Time: 08:30 - 10:00
Room: Maktoum C

Abstract no.: 33112

DYNAMIC ULTRASONOGRAPHIC EVALUATION OF FOOT IN CTEV PATIENTS - IS THERE PROGNOSTIC SIGNIFICANCE? A PROSPECTIVE STUDY

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Introduction: As the deformity of clubfoot is mainly concentrated around talo-navicular joint, we hypothesize that the angle between the long axis of the talus and the long axis of navicular may act as a reliable and reproducible measure of severity assessment; the disease outcome of treatment can potentially be better prognosticated. We prospectively set out to measure the talo-navicular angle by sonography at rest, and during foot manipulation; and this was correlated with clinical rigidity/flexibility, the number of manipulative casts applied and the final outcome. Materials and Methods: The study group included children of both sexes with idiopathic congenital clubfoot, less than one year of age, who had not taken prior treatment. Only unilateral cases were included as the normal foot of the same case was taken as control. With transducer placed along the dorsomedial border of foot between medial malleolus and first metatarsal in slightly oblique or vertical direction, oblique medial coronal view was obtained. Measurements were made in normal and manipulated positions. A total of 26 cases were included in the study and the measurements were serially documented. Results and Conclusion: Both the initial TNA and the change in angle on manipulation, showed negative correlation with Dimeglio as well as Pirani scores. Relation of angle change with clinical scores was statistically significant. The angle change on manipulation was the best predictor of total number of casts to be applied to achieve final correction by Ponseti method.

Date: 2012-11-29
Session: Paediatrics: Clubfoot
Time: 08:30 - 10:00
Room: Maktoum C

Abstract no.: 30992

MEDIUM TERM OUTCOMES OF SYMPTOMATIC PLANOVALGUS FOOT DEFORMITY CORRECTION IN CHILDREN

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Background: Lateral column lengthening combining bony and soft tissue procedures has been described for symptomatic planovalgus foot. We present our medium term outcomes using this technique in children. Methods: Twenty-five symptomatic planovalgus feet in fifteen patients were operated upon between 2005 and 2008. The mean age was 12 years 6 months. Ten had idiopathic pes planovalgus, two had overcorrected congenital talipes equinovarus, and one had skewfoot deformity. "A la carte" surgery included one or more bony elements - lengthening calcaneal osteotomy, heel shift, medial cuneiform osteotomy – iliac crest tricortical bone graft harvest and one or more soft tissue procedures - peroneus brevis/peroneus longus transfer, plantar fascia release and tibialis posterior advancement. The Visual Analogue Score for Foot and Ankle (VAS FA) and American Foot and Ankle Association (AOFAS) ankle-hindfoot and midfoot scores were measured. Clinical findings and complications were recorded. Results: Twenty feet in twelve patients were available for follow up at a mean interval of 4 years 6 months. The mean VAS FA, AOFAS ankle-hindfoot and midfoot scores were 82 ± 17 , 87 ± 14 and 80 ± 10 respectively. In all patients the medial arch was restored. One patient required bilateral lateral column shortening and medial cuneiform osteotomy to address overcorrection and supination, one had bilateral calcaneal screw removal and one had a subsequent heel shift. Conclusions: We have shown satisfactory medium term outcomes with "a la carte" lateral column lengthening surgery, and believe it can be recommended in childhood for symptomatic planovalgus foot deformity correction.

Date: 2012-11-29
Session: Paediatrics: Clubfoot
Time: 08:30 - 10:00
Room: Maktoum C

Abstract no.: 31027

MODIFIED ROBERT JONES PROCEDURE FOR MANAGING CLAWING OF LESSER-TOES IN PES CAVUS

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Introduction: Pes cavus is a complex foot deformity in which surgical correction remains challenging. The literature offers no clear evidence on managing clawing of the lesser-toes in pes cavus. Aim: To assess the long term functional outcome of modified Jones procedure for correction of lesser- toe clawing in pes cavus. Method: The surgical principles and techniques used were similar to those of the modified Jones procedure described for the great toe. We reviewed case notes and completed the Bristol Foot Score, the modified American Orthopaedic Ankle & Foot Society Mid-foot score, and a patient satisfaction questionnaire through telephone interviews. Results: We treated lesser-toe clawing in 11 feet from 8 patients (5 women, 3 men). Mean age of the patients at the time of surgery was 30 y (range 10 y to 58 y). Causes of pes cavus were Marfan syndrome, polio, spina bifida, spinal dysraphism, type 2 hereditary sensorimotor neuropathy and idiopathic. Mean duration of clinical follow up was 7 y (range, 6 months to 17 y). At the final clinical review, all 11 feet had good outcome. 6 feet had minor complications. The mean Bristol Foot Score was 27 and the mean Modified AOAFS Mid Foot Score was 76 indicating excellent results. Half the patients had mild persistent foot pain but all were satisfied with the outcome. Conclusion: Modified Jones Procedure for correcting lesser-toe clawing in pes cavus provides generally high patient satisfaction in spite of the few minor complications and late symptomatic relapses.

Date: 2012-11-29
Session: Paediatrics: Trauma
Time: 10:30 - 12:00
Room: Maktoum C

Abstract no.: 31009

CONVERSION FROM CONSERVATIVE TO OPERATIVE MANAGEMENT OF PEDIATRIC FOREARM FRACTURES: PREDICTORS OF CONSERVATIVE TREATMENT FAILURE

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Purpose: Paediatric forearm fractures are common. Despite increased interest in operative management, closed reduction and casting remains the mainstay of treatment. Concerns about operative complications make conservative management attractive; however, some fractures fail conservative treatment. Herein we examine factors that led to conversion from conservative to operative management of paediatric forearm fractures. Methods: Patients under 18 who initially underwent casting for diaphyseal forearm fractures from 2004-2010 were included. Patients were excluded if they had prior fractures, gunshot wounds, musculoskeletal comorbidities, or no follow-up. Gender, age, fracture location, angulation, single vs double bone, and distance between bones were examined as possible predictors of conversion. Univariate and multivariate analyses were used. Results: Of the 125 patients included in the study, 21 (17%) converted to operative management. Patients in the conversion group were significantly older. Average age in the conversion group was 11.5 years old, compared to 5.7 in the nonoperative group; no patients under 4 converted, and no patients older than 14 remained in the conservative treatment group. Other factors that differed significantly were lower angulation in the AP plane, more proximal ulna fracture location, and greater distance between bones in the conversion group. No difference was found with regard to gender, lateral angulation, single vs. double bone, or radius fracture location. In the multivariate analysis, distance between bones was no longer significant once age was taken into account. Conclusion: Older children and children with more proximal or less angulated ulna fractures are more likely to receive surgery for diaphyseal forearm fractures.

Date: 2012-11-29
Session: Paediatrics: Trauma
Time: 10:30 - 12:00
Room: Maktoum C

Abstract no.: 32909

COMPARISON OF DORGAN'S TECHNIQUE WITH LATERAL PINNING IN THE TREATMENT OF TYPE III SUPRACONDYLAR FRACTURES OF THE HUMERUS IN CHILDREN

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Aim: Closed reduction and percutaneous pin fixation is the treatment of choice for completely displaced supracondylar fractures of the humerus in children, although controversy persists regarding the optimal pin-fixation technique and the protection of iatrogenic ulnar nerve injury. The purpose of this prospective randomised study was to compare the efficacy of Dorgan's technique (n=21) versus lateral pinning (n=20) in pediatric supracondylar humerus fractures. **Materials and Methods:** The operation time and fluoroscopy screening time were recorded. A neurological examination was done within 24 h of operative intervention. Patients were followed for 6 months and had a clinical and radiological review at 2, 4 weeks, 2, 4 and 6 months. The primary study end points were a loss of reduction and iatrogenic nerve injury. Secondary study end points included radiographic measurements, clinical alignment, Flynn grade and complications. **Results:** Both groups had stable reductions and clinically normal alignment. But the fracture remained unstable in two cases treating by lateral pinning, a third pin be added from the lateral side to provide stability. There were no iatrogenic nerve injuries. The average operative and fluoroscopy times longer in the Dorgan's group (23 min, 21 sec.) compared with cross pinning group (17 min., 16 sec.) respectively. No cases of nonunion, malunion, or infection were identified during the follow-up period. **Conclusions:** With use of the specific techniques employed in this study, both Dorgan's technique and lateral pin fixation are effective in the treatment of completely displaced supracondylar fractures of the humerus in children.

Date: 2012-11-29
Session: Paediatrics: Trauma
Time: 10:30 - 12:00
Room: Maktoum C

Abstract no.: 31699

PEDIATRIC DISPLACED FRACTURES OF THE LATERAL CONDYLE OF THE HUMERUS TREATED USING HIGH STRENGTH, BIOACTIVE, BIORESORBABLE F-U-HA/PLLA PINS: A CASE REPORT OF 8 PATIENTS WITH AT LEAST 3 YEARS OF FOLLOW-UP

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Introduction: The purpose of this study is to present our surgical technique using bioresorbable pins made of forged composites of unsintered hydroxyapatite particles/poly-L-lactide (F-u-HA/PLLA) for treating pediatric displaced fractures of the lateral condyle of the humerus, to retrospectively evaluate the clinical outcome of 8 patients, and to verify the advantages of this device using postoperative radiographs. **Methods:** Eight patients (average age; 8.5 years old) were treated using F-u-HA/PLLA pins. Lateral condyle fractures were fixed using 2 threaded pins. All patients were placed in a long arm cast for 4 weeks after surgery. Radiographs were evaluated for fracture healing, radio-opacity of the pins, and the radiolucent zone around the pins. Pain, cosmetic deformity, and postoperative complications were assessed. **Results:** The average follow-up period was 52.5 months. All fractures were successfully united. All shadows of pins were observed and there was no radiolucent zone around the pins at the final radiographic follow-up. No patients experienced pain or cosmetic deformity at the most recent follow-up. Loss of reduction, malunion, deep infection, implant failure, osteolysis, skin ulcer, and foreign body reaction were not found postoperatively. No patient required any secondary operation. **Conclusion:** The radio-opacity of the F-u-HA/PLLA pins is a major advantage of this technique. No radiolucent zone around the pins or osteolysis on postoperative radiographs, and no postoperative complications were observed. Re-operation for removal was unnecessary. Open reduction, internal fixation using F-u-HA/PLLA pins offers several advantages for treating paediatric displaced fractures of the lateral condyle of the humerus.

Date: 2012-11-29
Session: Paediatrics: Trauma
Time: 10:30 - 12:00
Room: Maktoum C

Abstract no.: 31716

PAEDIATRIC TRAUMA: EXPERIENCE FROM A UK TRAUMA CENTRE

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Introduction: Previous epidemiological studies have shown fractures to constitute 10-25% of all paediatric injuries, mostly occurring in the distal radius and are more common in boys. The incidence of these injuries doubles beyond the age of 13, and is increasing due to sporting and recreational activities. Aim: To review paediatric orthopaedic trauma cases requiring operative intervention at our trauma centre to report our experience in treating these injuries. Method: Retrospective analysis of paediatric trauma cases from a surgical register between 2008 and 2010. The age, type of injury, surgical intervention, and amount of exposure to ionising radiation (intra-operative) were evaluated. Results: A total of 759 cases identified. 223 (30%) were 12-14 years of age. 677 (84%) were injuries to the upper limb, of these, there were 322 (50.6%) wrist fractures, 188 (58.4%) were in patients >10 years of age and 136 (21.4%) were forearm fractures. Of the lower limb fractures, 54 (44.3%) affected the ankle, and 27 (22%) were of the tibia/fibula. Manipulation under anaesthesia (MUA) alone was the preferred management for 245 (76.1%) of the wrist fractures, and 99 (74.3%) of forearm fractures. Open reduction internal fixation (ORIF) was the preferred management for 54 (44.3%) of ankle fractures, and 37 (74%) of fractures around the elbow. Conclusion: The incidence of paediatric trauma is higher approaching adolescence, and upper limb trauma has a significantly higher incidence, and that being fractures of the distal radius/ulna ($p < 0.01$). Management with MUA alone results in a lower exposure to ionising radiation for all fractures.

Date: 2012-11-29
Session: Paediatrics: Trauma
Time: 10:30 - 12:00
Room: Maktoum C

Abstract no.: 31704

IONISING RADIATION EXPOSURE IN PAEDIATRIC TRAUMA: A REVIEW OF CASES FROM A UK TRAUMA CENTRE

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Introduction: Trauma remains the highest cause of paediatric morbidity and mortality. These trauma patients incur radiation exposure during intra-operative management. Medical personnel have the responsibility to ensure observation of the “as low as reasonably achievable” (ALARA) principle; a practice mandate that minimises ionising radiation exposure. Aim: Quantify the difference in the amount of ionising radiation used per operating surgeon grade in paediatric trauma surgery. Methods: We retrospectively analysed intra-operative imaging in paediatric trauma between 2008 – 2010 at a UK trauma centre, recording injury demographics, surgeon grade, radiation exposure (Dose Area Product, DAP) and screening time. A mobile image intensifier was used in all cases and the lowest dose rate was selected for all screening. Results: Overall 782 trauma cases were analysed. 304 (39%) procedures were carried out by Consultants, 127 (16%) by senior registrars, and 351 (45%) by junior registrars. The mean screening times (\pm SD) in minutes were: Consultants 0.23 (\pm 0.21); senior registrars 0.24 (\pm 0.27); junior registrars 0.47 (\pm 1.5). The mean DAP (\pm SD) in Gy \cdot cm² were: Consultants 58.49 (\pm 53.66); senior registrars 87.2 (\pm 126.64); junior registrars 90.46 (\pm 180.02). This equates to a 51% increase in screening time, and 35% increase in DAP (radiation exposure) by a junior registrar compared to a consultant. Conclusion: We have found significantly lower screening time and radiation exposure in procedures performed by consultants compared to registrars ($p < 0.01$). Given the harmful and unknown long-term effects of ionising radiation exposure in children, we recommend increasing consultant presence in paediatric trauma theatres.

Date: 2012-11-29
Session: Paediatrics: Trauma
Time: 10:30 - 12:00
Room: Maktoum C

Abstract no.: 32993

USE OF FLEXIBLE INTRAMEDULLARY NAILING FOR TREATMENT OF UNICAMERAL BONE CYSTS IN LONG BONES

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Abstract: Background: Unicameral bone cyst is characterized by its tenacity and risk of recurrence. Flexible intramedullary nailing by closed methods is one of the modality of treatment and we present our result of use of this technique for treatment of unicameral bone cyst. Methods: Flexible intramedullary nailing for the treatment of a unicameral bone cyst was performed in 18 patients of whom 4 cases presented with a pathological fracture. All were managed immediately with intramedullary nailing. Out of the 18 cases, 6 were managed conservatively at other clinics before they were referred to our department. Remaining 12 cases were detected incidentally. 15 cases had cysts located in the humerus, 3 cases had cysts in the femur. The mean age of the patients at the time of surgery was 11.7 years and the mean duration of follow up was 16 months. Results: On radiological evaluation, 5 cysts healed completely (Stage I), 5 cysts healed with residual radiolucent areas < 3 cm visible on radiographs(Stage II), 7 cysts healed with residual radiolucent areas > 3 cm visible on radiographs(Stage III). All of the cysts in the present study responded to treatment. A change of nails was necessary in none of the patients, as the nails had become too short after bone growth. There were two complications in the series. Conclusions: Flexible intramedullary nailing provides early stability, which allows early mobilization and thus obviates the need for a plaster cast and may decrease the prevalence of the most common complication: a pathological fracture.

Date: 2012-11-29
Session: Paediatrics: Trauma
Time: 10:30 - 12:00
Room: Maktoum C

Abstract no.: 30777

FUNCTIONAL OUTCOMES AND COMPLICATIONS OF FLEXIBLE INTRAMEDULLARY NAILING VERSUS PLATE FIXATION FOR BOTH BONE DIAPHYSEAL FOREARM FRACTURES IN CHILDREN: A SYSTEMATIC REVIEW

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INTRODUCTION: Both-bone diaphyseal forearm fractures constitute up to 5.4% of all fractures in children under 16 years of age in the United Kingdom. Most can be managed with closed reduction and cast immobilisation. Surgical fixation options include flexible intramedullary nailing and plating. **OBJECTIVES:** The main purpose of this study was to systematically search for and critically appraise articles comparing functional outcomes, radiographic outcomes and complications of flexible nailing and plating for both-bone diaphyseal forearm fractures in children. **METHODS:** A literature search of MEDLINE (PubMed), EMBASE and Cochrane library databases using specific search terms and limits was undertaken. The critical appraisal checklist (adapted from Critical Appraisal Skills Programme- CASP, Oxford; Guyatt et al) for an article on treatment was used to aid assessment. **RESULTS:** All 7 studies identified were retrospective, comparative and non-randomized. They all included patients with similar baseline characteristics. There were no statistically significant differences in group outcomes for range of forearm movement, time to fracture union and complication rates. Less operative time and better cosmesis was noted in the IM nailing groups. Some studies showed post-operative radial bow was significantly abnormal in the IM nailing groups, but did not affect forearm movement. **CONCLUSION:** Based on similar functional and radiographic outcomes, nailing seems to be a safe and effective option when compared to plating for forearm fractures in children. However, critical appraisal of the studies in this review identified some methodological deficiencies and further prospective, randomized trials are recommended.

Date: 2012-11-29
Session: Paediatrics: Trauma
Time: 10:30 - 12:00
Room: Maktoum C

Abstract no.: 31564

**COMPARATIVE STUDY ON INTRAMEDULLARY TITANIUM ELASTIC NAIL
V/S K-WIRE FIXATION IN FEMUR SHAFT FRACTURE IN CHILDREN**

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Background: To compare the results of fixation by titanium elastic nail and K-wires in paediatric femoral shaft fractures. Methods: 26 patients with femoral shaft fracture aging 6-14 yrs were included in this study. We performed fracture fixation in 26 patients by dividing them in two equal groups, in one group we did intramedullary titanium elastic nail and in other group we did intramedullary K- wire fixation. Knee physiotherapy was started 2days after the surgery and partial weight bearing after 6th week of surgery and full weight bearing at clinico-radiologic union. Implant removal was done in both groups at 6 months. Results: Average time of callus formation and radiologic union was 6 to 10 weeks in both groups. One patient in K-wire group developed skin ulceration from protruding end of K-wires which resolved removing K-wire. Slight limb length discrepancy was seen in both groups. Cost comparison showed TEN was about more than 10 times costlier than K-wires. Conclusion: Results of fixation were found to be near about same in both the groups except the cost effectiveness of K-wires. Keywords: TEN, K-wire, paediatric femur shaft fracture & cost effectiveness.

Date: 2012-11-29
Session: Paediatrics: Trauma
Time: 10:30 - 12:00
Room: Maktoum C

Abstract no.: 31558

INDIGENOUS - COST EFFECTIVE FLEXIBLE NAIL FOR FRACTURES OF FEMUR IN CHILDREN

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Presently used flexible-nails-Titanium-Elastic-Nails(TEN) requires high-technicality-equal balancing force—surgeon has to choose two-nails of same-diameter with equal-curvature ,same-level opposite-entry points-otherwise possibility of mal-relation of fracture^{1,2,3 4,5} This may be due to low-flexibility. Technicality and high-cost led us to develop more-flexible-cost-effective nails from stainless-steel for average-Indian-patients. This paper discusses biomechanical-Finite-Element-Analysis-(FEA)-clinical-radiological and outcome measured by patients where new flexible-nails used in fractures of femur in-children. TEN tested on Universal-Testing-Machine(UTM)at Government-Engineering-College and data of flexibility (ductility) in % and Proof-Stress and Ultimate-Tensile-Strength(UTS) in-Mega-Pascal(MPa) collected. New-Flexible nails cold-worked to achieve more-flexibility and strength and tested at same UTM. Mechanical study on computer model-FEA done. New-nails are straight-universal-length having diameter 1.5mm-4.5mm, innovative-ends with identical-conical-pathfinder-tip for better gliding. Consecutive 44 children ranging 5-15-yr with fractures-shaft-femur treated using new-nails of different-diameter bent in different-plane, curvature of “s” and “c”-shape having single-entry under C-arm. Operative-time-exposure in c-arm noted. Nails cut leaving 1 cm of nail-knurled with innovative-knurlier-cutter-pliers for easy removal. Patients examined clinically-radiologically-at-3-6-12-24-36-52wks. Patients assessed for Intraoperative-problems of difficulty in reduction-penetration of epiphysis-fracture fragment-separation of concomitant-undisplaced-fracture-butterfly fragment-method of immobilization-change-of-position of nail, bending-breakage of nail-irritation at distal-end , difficulty in removal-pain-infection-limb-length-discrepancy-union-malunion-range of movement-weight bearing-deformity-limp -final functional-results-patient satisfaction . Flexibility with Innovative-Nail is 50%-more in comparison to-TEN, maintaining 1000-MPa-UTS. Union was 100%. Penetration-of-fragment is nil-soft-tissue irritation in one. Functional-results were comparable to previous-series^{4, 5,6,7,8,9,10} TEN requires balancing-force^{1, 2,3,4,5}, probably due-to low-flexibility. Innovative-Nail has more-flexibility allowing surgical-latitude of single-entry, bending-in-different-plane, curvatures-diameters in-combination -glides easily in canal-cost-effective, has reduced-complication. This is our preliminary-study; however multicentre-RCT with help from Indian-Institute-of-Management (IIM) is initiated for more-evidence.

Date: 2012-11-29

Session: Paediatrics: Hip & Knee

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 31167

SURVIVAL OF THE BIRMINGHAM INTERLOCKING TRIPLE PELVIC OSTEOTOMY

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This study is to determine the survival and outcomes of the Birmingham Interlocking Triple Pelvic Osteotomy. The Triple Pelvic Osteotomy (TPO) is a joint-preserving option for the treatment of young adults with hip dysplasia. The long term success of the procedure is not known. The senior author has been performing Birmingham Interlocking Triple Pelvic Osteotomies for 18 years. The outcomes of the first 100 patients (117 TPOs) were reviewed. The primary outcome measure of the study was the Kaplan-Meier survival curve for the TPO. Hip replacement or resurfacing were failure points. The Oxford Hip Score (OHS) and University of California, Los Angeles (UCLA) score were secondary outcome measures. Follow-up was 93% for survivorship. The mean age at operation was 31 years (7 to 57 years). The mean pre- and post-operative centre-edge angles were 19° and 50° and acetabular indices were 23° and 2°. The Kaplan-Meier survival curve demonstrates that the 10, 15 and 18-year survival rates are 76%, 57% and 50% respectively. Survival was 89% if the osteotomy was performed before 20 years of age. The median UCLA score was five (inter-quartile range three to seven). Median OHS was 41 (inter-quartile range 24 to 46). The UCLA and OHSs show that those with surviving osteotomies tend to have good hip function. The Birmingham Interlocking Pelvic Osteotomy provides a valuable tool to preserve dysplastic hip function and delay arthroplasty surgery, particularly in the younger patient. It is best performed early before arthritis sets in.

Date: 2012-11-29
Session: Paediatrics: Hip & Knee
Time: 14:30 - 16:00
Room: Maktoum C

Abstract no.: 31562

HIP JOINT RECONSTRUCTION IN SCHOOLAGE CHILDREN WITH CONGENITAL HIP DISLOCATION

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Introduction: In the opinion of many specialists, the future outcomes of surgical management of hip dislocation in children older than 6 years remain unclear. Therefore, radical interventions, despite the technology type, have raised a lot of disputes. Materials and methods: Treatment outcomes of 27 children (30 joints) with congenital hip dislocation were analyzed. Mean age at intervention was 10 years (7-17 years). The joints were assessed according to Tonnis: grade II joints - 9, grade III - 13, grade IV – 8. Marked articular surface incongruence was revealed in 11 joints. All subjects underwent gradual closed reduction with the Ilizarov apparatus followed by pelvic and femoral components correction. L-shaped iliac osteotomy was used in 15 cases, periacetabular osteotomy in 2 and pelvic one in 11. Closed reduction failed in 3 patients, so the open method was used later. Results: Outcomes were followed from 2 to 6 years. Functional outcomes according to Colton were: excellent – 2, good – 18, fair - 8, poor - 2. Radiographic findings according to Severin were: IIa type - 16, IIb type - 7, III type – 6, and IV type – 1. Aseptic necrosis incidence in the femoral head was 13.3%. Conclusions: the use of the technique with application of the external apparatus provides sufficient stability and joint function in most cases and does not result in joint decompensation or irreversible changes in joint components.

Date: 2012-11-29

Session: Paediatrics: Hip & Knee

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 30773

DOME PELVIC OSTEOTOMY

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Many types of pelvic osteotomies have been developed during the last CENTURY to treat a wide variety of acetabular dysplasia, that is; always associated to developmental dysplasia of hip. Many problems are facing the orthopaedic surgeons during and after surgery, so that no one of these osteotomies is ideal. From 2000 to 2010; 175 DDH patients were operated performing a new type of pelvic osteotomy to treat a wide variety of acetabular dysplasia in DDH patients [We call it DOME PELVIC OSTEOTOMY]. Age 18 months to 13 years. 105 females and 70 males. 110 bilateral and 65 unilateral. In this osteotomy the iliac bone is cut in curved line above antebellum as a dome, with complete osteotomy. Bone graft is not used in any of our cases. Hip Spica is applied after surgery for 6 weeks. Follow-up 2 to 10 years. Good to excellent results have been achieved after this Dome pelvic osteotomy, compared with others Pelvic Osteotomies regarding; acetabular coverage, bone remodeling, hip stability. Stiffness, wound problems, gait disorder, shape of pelvis, disuse atrophy, infection, so that no significant complications have been occurred relating to this new osteotomy, however many problems caused by other osteotomies are eliminated or minimized by the new DOME PELVIC OSTEOTOMY.

Date: 2012-11-29

Session: Paediatrics: Hip & Knee

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 30761

IS CLUBFOOT ASSOCIATED WITH DEVELOPMENTAL DYSPLASIA OF THE HIP?

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Introduction: The relationship between congenital talipes equinovarus (CTEV) and developmental dysplasia of the hip (DDH) remains uncertain. The role of routine hip screening in children with CTEV is debated. Recent studies have found a high incidence of DDH in patients with CTEV. The aim of our study was to determine the true incidence of radiographic hip dysplasia and identify the need for routine hip screening in patients treated for CTEV. Methods: From a single centre database of 165 children consisting of 260 CTEV, a prospective observational cohort study of 101 children was performed over a period of 6 months. A single anterior-posterior pelvic radiograph was performed at a minimum age of 5 months. DDH was determined by a single senior investigator based on the age-adjusted acetabular index (AI) as described by Tonnis. Results: There were no dislocations or subluxations. According to the age-adjusted AI, 16 children had 'light' dysplasia and one child had 'severe' dysplasia. The child with severe dysplasia was known to have DDH and had already undergone treatment. The 16 children with light dysplasia did not require any form of treatment. Conclusion: Less than 1% of children with CTEV were identified to have DDH requiring treatment. This is consistent with the majority of the literature supporting the premise that there is no true association between CTEV and DDH. We therefore feel that routine hip screening for children with CTEV is not supported by current evidence and cannot be recommended.

Date: 2012-11-29
Session: Paediatrics: Hip & Knee
Time: 14:30 - 16:00
Room: Maktoum C

Abstract no.: 31071

DEGA OSTEOTOMY FOR THE MANAGEMENT OF DDH IN WALKING CHILDREN BETWEEN 2 TO 6 YEARS, A MIDDLE TERM FOLLOW-UP STUDY

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Aim:The aim was to evaluate the clinical and radiographic follow-up results of the use of Dega osteotomy in walking DDH patients, with high dislocation grades, between 2 and 6 years. **Patients & methods:**Between Jan. 2000 and May. 2009, there were 48 patients, 38 unilateral, and 10 bilateral cases, with a total number of 58 treated hips. Inclusion criteria included; patients older than 2 years, no previous hip surgery, Tonnis grade III or IV hips only included. A minimal period of post-operative follow-up of 2 years was a must for inclusion. Femoral shortening was performed in 51 hips. **Results:**The post-operative follow-up period ranged from 24 month to 10 years, with a mean of 72 month. Favorable clinical outcome was obtained in 85.3% of the cases at the final follow-up visit, while unfavorable results took place in 14.7%. There was a statistical difference between the final clinical and radiographic outcomes. Acetabular remodeling was monitored by the acetabular index and improved in all the cases with favorable results. Major complications encountered including; progressive pain, avascular necrosis, redislocation, limb length discrepancy, and the need for another surgery in 4 patients. **Conclusion:**Dega osteotomy can be used for the management of DDH patients after open reduction and capsulorrhaphy in walking children under 6 years of age with favorable results anticipated. **Significance:**Compared to Salter innominate osteotomy, Dega osteotomy attained a high success rate and was useful for the management of DDH walking patients under 6 years. Long-term follow-up is still needed for this type of osteotomy.

Date: 2012-11-29

Session: Paediatrics: Hip & Knee

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 31580

TRIPLE PELVIC OSTEOTOMY IN ADOLESCENTS

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Residual dysplasia of the hip joint in adolescents is complemented with a complex of biomechanical problems, the pelvic component of dysplasia being often the leading one (more than 58% of all the cases). Triple pelvic osteotomy occupies the leading position in our clinic (152 cases - 54% of all the surgical interventions) and is the operation which permits to achieve the aims. The aims of surgical intervention are stability of the hip joint, elimination or prevention of hip lateralization, restoration of articular surface congruity, centration of the femoral head, normalization of biomechanical conditions of the attached gluteus muscles function. The features of our operative technique are: the only one approach (by Smith-Petersen), pelvic bones osteotomies without detachment of the periosteum, use of incomplete ischium osteotomy (osteotomy-osteoclasia), pubic paraacetabular osteotomy with preservation of the pubo-capsular ligament that prevents lateral displacement of the hip joint; angle-shaped ilium cut line, avoidance of direct contact with large nerve trunks and vessels. Triple osteotomy of the pelvis reorients the acetabulum in three dimensions and permits to get the angle of vertical correspondence between pelvic and femoral components of the joint up to 90°. Displacement of the acetabulum fovea into a nearly horizontal or horizontal position is the most important biomechanical result, as it considerably increases the joint tolerance to load.

Date: 2012-11-29

Session: Paediatrics: Hip & Knee

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 32249

ROTATIONAL OSTEOTOMY OF THE FEMUR IN LEGG-CALVE-PERTHES DISEASE AND PREOPERATIVE PLANNING

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The deformation of the femoral head with the disease Legg-Calve-Perthes disease leads to an unfavourable prognosis of the hip joint. The optimal treatment for this condition is still controversial. The purpose of this study was to evaluate long-term clinical results of rotational osteotomy and to develop a method for preoperative planning of magnitude of rotation of the proximal femur. The surgical treatment performed of 60 children with Legg-Calve-Perthes disease with 2-3 stages of Salter-Thompson. The average patient age was 7.4 years (5 to 10 years). All patients underwent CT with sagittal sections of the femoral head to assess the extent of damage and calculation of the topography of foci of necrosis of the head meridians. The aim of surgical treatment was the removal of the loadable zone foci of necrosis and restoration of the articular surface of the head of congruence in the load zone. According to the CT scan was calculated the angle of rotation of the femoral head and neck. Intertrochanteric femoral osteotomy was performed, with the transposition of the greater trochanter to attach muscles. In all cases, the rotation of the proximal femur was performed anteriorly, the average angle of rotation was 32 degrees (15 to 55 degrees). The observation period averaged 4.5 years (2 to 6 years). Treatment results were evaluated by Stulberg criteria. According to the Stulberg classification, 33 hips (55 %) (Stulberg 1-2) were successful, 19 hips (31,6 %) (Stulberg 3) were discussible and 8 hips (13.3%) (Stulberg 4-5) were failures.

Date: 2012-11-29

Session: Paediatrics: Hip & Knee

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 32841

ASSOCIATION OF GENU VALGUM IN CHILDREN WITH COXA VARA RESULTING FROM SLIPPED UPPER FEMORAL EPIPHYSIS

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Introduction: Alteration of the mechanical axis in the presence of slipped upper femoral epiphysis may alter the forces across the knee and so effect growth. Methods: We retrospectively reviewed all patients with SUFE that presented to our unit between January 2007 and October 2011. Clinic notes and radiographs were analysed. Only those patients with long leg radiographs were included. Results: A total of 12 children were identified (11 boys and 1 girl), the mean age at presentation was 12 years (ranging from 8–15). Surgical treatment included cannulated screw fixation of the affected side in 9 patients. The FISH procedures in 2 and bilateral valgus upper femoral osteotomy in 1. 5 developed secondary genu valgum (41.6%): 4 ipsilateral to the side of the pathology and 1 bilaterally (more pronounced on the affected side). Surgical correction with lateral hemi epiphysiodesis by application of 8 plates was required. Discussion: Our study reveals an association that has not been previously described in the literature. Patients with slipped upper femoral epiphysis have a higher propensity to develop ipsilateral genu valgum. We suggest that a reduction in the femoral neck length might result in abnormal Hueter-Volkman forces across the physis causing progressive change in alignment. Recognition of the association of genu valgum with SUFE allows the surgeon to counsel the family about the possible need for subsequent operations on the knee.

Date: 2012-11-29
Session: Paediatrics: Hip & Knee
Time: 14:30 - 16:00
Room: Maktoum C

Abstract no.: 32992

**ASSESSMENT OF CLINICAL OUTCOME OF PERCUTANEOUS NEEDLE
RECTUS/QUADRICEPS TENOTOMY IN TREATMENT OF CONGENITAL
KNEE DISLOCATION**

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Background: Congenital knee dislocation (CDK) is a rare (2/100,000 live births). Aim of this study is to assess the outcomes in a series of patients treated with percutaneous rectus/quadriceps tenotomy for treatment of CDK. Methods: Prospective series of 6 consecutive cases (4 girls, 2 boys) of CDK were included in the study. The mean age of presentation was 2.3 weeks (range 0.5 to 3 weeks) with all cases having bilateral disease (12 knees). Treatment consisted of percutaneous rectus/quadriceps tenotomy done using a 16 gauge needle with acute correction of deformity. A spica cast was applied for 3 weeks followed by pavlik harness for 6 months. These patients were assessed for knee function with the knee range of motion and quadriceps function at each follow up. Results: The mean follow up was 16±5 months with all patients more than 1 year of age at follow up. Total range of motion for entire group averaged around 130±10° with 11 of 12 knees having full range of motion with back of leg approximating to back of the thigh. All patients were walking independently at the time of follow up. Conclusion: Percutaneous rectus/quadriceps tenotomy used for acute treatment of congenital knee dislocation gives good early functional outcomes. All congenital knee dislocations were completely reduced, had full range of motion and no quadriceps lag with good power. The results of our study support the use of a less invasive approach for initial treatment of congenital dislocation of knee.

Date: 2012-11-29
Session: Paediatrics: Hip & Knee
Time: 14:30 - 16:00
Room: Maktoum C

Abstract no.: 32756

SEVERE CONGENITAL KNEE DISLOCATION: PRENATAL DIAGNOSIS, TREATMENT AND PROGNOSIS

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Introduction: Congenital knee dislocation is a rare condition, and it ranges from easily reducible forms to resistant deformities. The aim of this study is to discuss the CDK treatment protocol with a minimal rate of surgery. Methods: 29 patients (38 CDK) were treated from birth. Age at presentation ranged from 5 minutes to 40 days. 4 knees were diagnosed in utero. Patients with arthrogryposis and other syndromes were not included. Patients with simple deformities were excluded from the study. All knees were treated using typical protocol. First step was manipulative treatment: permanent manual traction and flexion with tibiofemoral counter pressure. If the reduction with knee flexion up to 90° were achieved, posterior knee-flexed splint was applied for 1 week. In case of failure, serial casting was performed with 2-4 days interval, traction and manipulations were done before the next cast applications. If failed, V-Y quadricepsplasty and anterior joint release were done. Average follow-up was 10,8 years (range 1-22 years). Results: Seringe criteria were used for result evaluation. Final outcome was excellent in 29 (80,5%), good in 4 (11,2%) and fair in 3 knees (8,3%). Only 2 irreducible knees (5,6%) underwent surgery due to failure of conservative treatment. Conclusions: The treatment of congenital knee dislocation should be started in the first hours of life, just after case evaluation. Permanent manual traction & flexion is the optimal choice of immediate treatment. Significance: Severe CDK can be treated successfully without any surgery in most of cases.

Date: 2012-11-29
Session: Paediatrics: Tumours
Time: 17:00 - 18:30
Room: Maktoum C

Abstract no.: 32014

LONG-TERM OUTCOMES FOR SURGICAL TREATMENT OF SPINAL ANEURYSMAL BONE CYSTS: A 4-STEP APPROACH

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ABC is a benign but locally aggressive tumour-like condition. We compared a 4-step approach, consisting of intralesional curettage, high-speed bur, electrocautery, and bone grafting to the traditional approach, consisting of curettage and bone grafting. Methods: Twenty-one cases of spinal ABC were collected from a tertiary paediatric tumour centre over a 21 year period (1990 to 2011). Results: The mean age of the patients was 11.9 years (range 3.6 to 18.6). There were 10 males (48%) and 11 females (52%). The mean follow-up time was 5.2 years (range 0.4 to 16). Fifteen patients (71%) underwent the 4-steps approach, while 6 (29%) were treated with curettage and bone grafting only. Sixteen patients had a follow-up of 2 years or more (11 with the 4-step and 5 with the traditional technique). The mean blood loss was 448mL in the 4-steps group and 400mL in the traditional group, $p=0.639$. There was one change in neuromonitoring in each group, $p=0.45$, one patient had a previous motor weakness that persisted after surgery and one patient was asymptomatic at the last follow-up. There were 4 recurrences in the traditional technique and one recurrence the 4-steps group, $p=0.028$, $NNT=1.6$. The 3 year disease free survival is 20% in the traditional group versus over 80% in the 4 step group. Conclusion: This is the largest series presented with paediatric only spinal ABCs. We suggest that a 4-step approach to a spinal ABC in paediatric patients is a safe and more effective technique in preventing recurrence.

Date: 2012-11-29
Session: Paediatrics: Tumours
Time: 17:00 - 18:30
Room: Maktoum C

Abstract no.: 31796

SARCOMATOUS TRANSFORMATION OF OSTEOCHONDROMA

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Sarcomatous transformation of osteochondroma Background: Osteochondroma is the most common benign body tumour and has the potential for malignant transformation to usually chondrosarcoma. Methods: We report 12 cases of secondary chondrosarcoma, developing in osteochondroma. Four patients had solitary osteochondroma and 8 patients had multiple hereditary osteochondromatosis (MHO). Recent increase in size of bony swelling and pain/discomfort were common symptoms. The diagnosis was based on plain radiograph, CT scan and MRI finding, in conjunction with histopathological evaluation particularly in grade/chondrosarcoma. Eleven patients were treated surgically-amputation was done in three, wide excision in three, marginal excision in four and debulking was done in one case. Results: Out of 12 patients, 3 have died; one patient is living with disease and remaining 8 are having disease free survival after a mean follow up of 48 months. Early timely detection and wide excision offers the best results. Conclusion: Wide surgical resection or radical excision appears to be the treatment of choice for these lesions. Key-words: Osteochondroma; Multiple hereditary osteochondromatosis, Sarcomatous transformation.

Date: 2012-11-29
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Time: 17:00 - 18:30
Room: Maktoum C

Abstract no.: 32869

RADIATION-INDUCED OSTEOCHONDROMA AFTER BONE MARROW TRANSPLANTATION FOR CHILDHOOD MALIGNANCIES

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The aim of this study was to estimate the influence of total body irradiation (TBI) on the development of radiation-induced osteochondroma (RIO). We retrospectively reviewed the medical records of all patients surviving more than 5 years who received TBI (10-12Gy fractionated) as part of the conditioning prior to BMT treated at our hospital between 1991 and 2005. There were 231 children under the age of 15 years who underwent BMT with TBI. Seventy-nine of these children survived more than 5 years and were evaluable for this study. We identified 11 patients (eight with leukemia and three with neuroblastoma, five boys and six girls) with single (7 patients) or multiple (4 patients) RIO. The mean age at diagnosis of RIO was 9.2 years (6.2-15.1 years). The mean age at which TBI had been administered was 1.6 years (0.5-5.6 years). The mean latent time to clinical presentation of RIO was 6.8 years (4.2-9.6 years) after irradiation. RIO was discovered during routine clinical follow-up by finding a mass or was noted incidentally on radiographs which were performed for other reasons. The incidence of RIO was 41% of all the patients received TBI under 5 years of age. In contrast, no RIO has been observed among the patients who were aged over 5 years at the time of TBI. No osteochondroma, including five lesions removed surgically, showed evidence of malignant change. This study indicates that younger patients, especially under the age of 5 years, are at increased risk of RIO following TBI.

Date: 2012-11-29
Session: Paediatrics: Tumours
Time: 17:00 - 18:30
Room: Maktoum C

Abstract no.: 32750

A BIOEXPANDABLE ENDOPROSTHESIS (MUTARS BIOXPAND) IN MALIGNANT BONE TUMORS IN CHILDREN - FIRST CLINICAL RESULTS

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Introduction: Bioexpandable endoprostheses offer better options in children after resection of malignant bone tumors to compensate limb length discrepancies at maturity. Especially if there is a high demand of lengthening, the proportion of the residual bone shaft to prosthesis and therewith the long term stability becomes worse. With new types of prostheses the residual bone and not the body of the prosthesis can be enabled to grow using the method of callus distraction, diminishing host bone – endoprosthetic lever arm forces. Methods: In 6 patients (5x femur, 1x tibia), mean age 17,1 years the resulting limb length discrepancy after resection of a malignant bone tumor (5x Osteosarcoma, 1x Ewingsarcoma) was corrected at maturity. The stem of the initial prosthesis was exchanged to a motorized distraction nail (Fitbone) the residual bone was osteotomized and lengthened 1mm per day. In 2 patients the lengthening was done in 2 steps. The medium lengthening distance was 78mm. Results: In all patients lengthening was completed successfully. In 2 patients overlengthening was done to reduce the size of the later definitive prosthesis. In 4 patients meanwhile a coated stem could be implanted to allow bone ingrowth. In 1 case between lengthening intervals a breakage of the nail occurred, so the second step was done earlier. Conclusion: Bioexpandable endoprostheses offer new perspectives of bone growth to achieve equal leg length even after resection of malignant bone tumors. Due to the fact that the lever arm forces are reduced by lengthening, better long term results can be expected.

Date: 2012-11-29
Session: Paediatrics: Tumours
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Room: Maktoum C

Abstract no.: 32622

DIAGNOSIS AND TREATMENT OF BONE CHONDROBLASTOMA IN CHILDREN

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The study was based on experience in diagnosis and treatment of 102 patients with chondroblastoma (56 boys, 46 girls), aged from 4 to 7 years. Average duration of disease in all patients made up 1.5 years. Clinical picture was characterized by pain syndrome, restriction of movements in the affected joint and flexion contracture. Radiologic methods were the basic ones for diagnosis. The most informative techniques were CT and MRT. They provided the objective view of the size, structure, margins of the lesion focus and played a significant role in the determination of the surgical intervention volume. Differential diagnosis with tuberculous osteitis, osteomyelitis, dystrophic cysts, and malignant tumors was used. Trepan biopsy under CT control was performed when necessary. The main condition of the surgical treatment was the observance of oncologic principles: marginal subchondral resection of bone together with pathologic focus within the visible border of healthy tissue followed by either auto- or alloplasty (Tutoplast® allograft) of the defect with preliminary electrocoagulation of the cavity. Treatment results were assessed by oncologic and orthopaedic protocols. Follow up period was from 1 to 6 years. Relapse was noted in two cases. In the rest of patients no relapse with good functional results was observed.

Date: 2012-11-29
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Time: 17:00 - 18:30
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Abstract no.: 32262

**BIOLOGICAL RECONSTRUCTION AFTER RESECTION OF TUMOUR
AROUND KNEE WITH ADJUVANT NAILING**

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Giant cell tumours (GCTs) of bone are aggressive benign tumours. Wide resection is reserved for a small subset of patients with biologically more aggressive, recurrent and extensive tumours. As the patients affected with GCT are young or middle-aged adults with a normal life expectancy, arthrodesis is an attractive option for reconstruction in these patients. Twenty-six patients of mean age 33.1 years with Campanacci Grade III giant cell tumours around the knee (15 distal femoral and 11 proximal tibial) were treated with wide resection and arthrodesis from January 1996 through January 2011. Arthrodesis was performed using nailing with free fibular graft (n = 18), IM nail with turnoplasty (n = 8) combined with autogenous bone grafts. The fusion after the first surgery was achieved in 23 patients, 2 patients required additional Local recurrence was seen in one patients required amputation. Wide resection and arthrodesis in aggressive GCTs around the knee is a good treatment option. IM nail combined with fibular graft and turnoplasty seems to be a good method of arthrodesis with high fusion rates, least shortening and early rehabilitation. Keywords: Giant cell tumour; knee, resection arthrodesis IM nail.

Date: 2012-11-29
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Time: 17:00 - 18:30
Room: Maktoum C

Abstract no.: 31335

TREATMENT OF ANEURISMAL BONE CYST BY CURETTAGE AND HYDROGEN PEROXIDE AS AN ADJUVANT WITHOUT REFILLING OF THE RESULTING CYSTS

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Aneurysmal bone cyst is a rare tumour like lesion with wide controversy as regard the perfect means of treatment and the way to manage the resulting bony cyst after curettage. Patients; the study included 24 patients, 13 were males and the mean age was 12.6 year (range 6-26). 6 cases diagnosed as solid aneurismal bone cyst. 9 cases were in the proximal femur (37.5%). Methods; all cases treated by thorough curettage followed by wash of the cyst by hydrogen peroxide for 5 minutes. No bone graft or substitute was used as a filler of the cysts except Strut fibular graft that was used to stabilize weak cysts in 9 cases. Plaster cast was used in 11 cases for external fixation. Follow up ranged from 6 to 40 months (mean 20). Results: All cysts healed without pathological fracture. No local recurrence until the end of follow up. All patients are back to normal life. Conclusion: thorough curettage with lavage of the cyst by hydrogen peroxide could be an acceptable method of treatment of aneurismal bone cyst without need of refilling of the resulting cysts.

Date: 2012-11-29
Session: Paediatrics: Tumours
Time: 17:00 - 18:30
Room: Maktoum C

Abstract no.: 31646

MANAGEMENT OF UNICAMERAL BONE CYSTS BY AUTOLOGOUS BONE MARROW INJECTION IN ADDITION TO METHYLPREDNISOLONE

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Unicameral (simple) bone cysts are common, benign, fluid-containing bone lesions, occurring at the metaphysis of long bones, predominately in children. Treatment is usually by curettage and bone grafting, steroid injections, or bone marrow injections. The aim of this retrospective study is was to examine the effectiveness of treating simple bone cysts by autologous bone marrow transfer and methylprednisolone injections. Patients assessed in this study had presented to our institute from 1st of January 2006 until 1st of January 2012. The patients included in this study all suffered from UBC with no associated fracture of the affected bone. Time of healing was based on radiological appearance on plain x-rays by the presence of transverse bony septa across the cyst. All patients showed radiological evidence of cyst consolidation post-operatively within 3 months, and almost complete resolution within a year. Management of simple bone cysts with autologous bone marrow transfer and methylprednisolone injections is an effective and minimally invasive method of treatment.

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Room: Maktoum C

Abstract no.: 31074

**MANAGEMENT OF RARE UNUSUAL MYOFIBROMATOSIS OF THE TIBIA
IN TWO PATIENTS USING THE ILIZAROF METHOD**

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Aim: The aim of this study was to evaluate and discuss the adequacy of the Ilizarof method for the management of rare infantile tibial myofibromatosis. **Patients & methods:** Two patients aged 4 and 6 years old were presented by unusual tibial deformities and limb length discrepancy. They were diagnosed by histopathological examination to have infantile myofibromatosis. They were both treated using the Ilizarof method. **Results:** In both cases the Ilizarof method was successful in correction of the tibial deformity and limb length discrepancy. In one patient recurrence of the deformity occurred after ten years of follow-up, and the Ilizarof method was used again for correction of the deformity. **Conclusion:** The Ilizarof method was found to be successful in the management of rare infantile myofibromatosis of the tibia and its recurrence. **Significance:** Infantile solitary myofibromatosis of the tibia is a rare tumor in children and could be treated using the Ilizarof method, however recurrence was recorded and is to be anticipated.

Date: 2012-11-29

Session: Sports Traumatology: Cartilage Repair

Time: 14:30 - 16:00

Room: Rashid A

Abstract no.: 33080

MOSAICPLASTY IN OSTEOCHONDRAL LESIONS OF THE KNEE

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Objective: The purpose of this study was to evaluate the results of osteochondral autografting of articular cartilage defects of the knee by the mosaicplasty technique at the military hospital. **Materials and Methods:** One hundred eighty six patients underwent mosaicplasty for cartilage lesion of the knee between 1998 and 2007 at military hospital. Of these patients, 151 (81.2%) were male, and 35 (18.8%) were female, and the mean follow-up period was 18.5 months (range from 12 to 24 months). The mean size of lesions was 2.7 cm² (range from 1 to 4.5). Preoperative and postoperative direct radiography and MRI were used during follow-up. **Results:** The mean age of patients was 26.01 years (20 to 47). According to Outerbridge classification, 78 patients (41.9 %) had Grade 3, and 108 patients (58.1%) Grade 4 damage. The mean preoperative Lysholm score of the patients was 54.66 ±3.75 while it increased to 87.74 ± 3.12 during the postoperative second year. The increase in Lysholm scores was statistically significant (p=0.00). The Lysholm score was found to be excellent in 32 (17.2 %), good in 139 (74.7%), and fair in 15 (8.1%) of the patients. **Conclusions:** Mosaicplasty is an advantageous technique in regards to harvesting of natural hyaline articular cartilage, chondrocyte production, non-reliance on laboratory assessments, lack of technical steps such as matrix implantation or mesenchymal cell proliferation. According to this study, we conceive that autologous osteochondral mosaicplasty is a useful alternative in treatment of focal full thickness cartilage damages of the knee joint.

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Session: Sports Traumatology: Cartilage Repair

Time: 14:30 - 16:00

Room: Rashid A

Abstract no.: 33076

**OPEN MOSAICPLASTY IN OSTEOCHONDRAL LESIONS OF THE TALUS:
A PROSPECTIVE STUDY**

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Objective: The osteochondral lesions of the talus present with symptoms of pain and restricted motion, having an impact on daily life. We evaluated the 2-year outcomes in patients whose large osteochondral lesions of the talus were treated with medial malleolar osteotomy and mosaic graft harvested from the knee on the same side. **Method:** Thirty-two patients who had cartilage lesions due to osteochondritis dissecans in medial aspect of the talus underwent mosaicplasty following medial malleolar osteotomy. Three (9.4%) patients were female, and 29 (90.6%) were male, with a mean age of 27.5 years (range 20 to 47 years). The patients were followed for a mean period of 16.8 months (range 12 to 24 months). The staging and treatment plan of the osteochondral lesions of the talus were made according to the classification by Berndt and Harty. The follow-up of patients were performed by direct radiography and MRI. The American Orthopaedic Foot & Ankle Society (AOFAS) scoring system was used for the assessment of patients during the pre- and post-operative periods. **Results:** The patients were followed for a mean period of 16.8 months (range 12 to 24 months). The mean preoperative AOFAS score was 59.12 ± 7.72 whereas it increased to 87.94 ± 3.55 during the postoperative year 2. The increase in AOFAS scores was statistically significant ($p=0.00$). **Conclusion:** We concluded that open mosaicplasty is a very reliable and effective method in the treatment of osteochondral lesions with a subchondral cyst formation in the talus, exceeding 1.5 cm in diameter.

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Session: Sports Traumatology: Cartilage Repair

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Room: Rashid A

Abstract no.: 31983

THE ROLE OF AUTOLOGOUS CHONDROCYTE IMPLANTATION IN THE TREATMENT OF SYMPTOMATIC CHONDROMALACIA PATELLAE

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INTRODUCTION: Chondromalacia patella is a distinct clinical entity of abnormal softening of the articular cartilage of the patella, which results in chronic retropatellar pain. Its aetiology is still unclear but the process is thought to be due to trauma to superficial chondrocytes resulting in a proteolytic enzymic breakdown of the matrix. Our aim was to assess the effectiveness of autologous chondrocyte implantation on patients with a proven symptomatic retropatellar lesion who had at least one failed conventional marrow-stimulating therapy. **METHODS:** We performed chondrocyte implantation on 48 patients: 25 received autologous chondrocyte implantation with a type I/III membrane (ACI-C) method (Geistlich Biomaterials, Wolhusen, Switzerland), and 23 received the Matrix-assisted Chondrocyte Implantation (MACI) technique (Genzyme, Kastrup, Denmark). **RESULTS:** Over a mean follow-up period of 40.3 months, there was a statistically significant improvement in subjective pain scoring using the visual analogue scale (VAS) and objective functional scores using the Modified Cincinnati Rating System (MCS) in both groups. **CONCLUSIONS:** Chondromalacia patellae lesions responded well to chondrocyte implantation. Better results occurred with MACI than with ACI-C. Excellent and good results were achieved in 40% of ACI-C patients and 57% of MACI patients, but success of chondrocyte implantation was greater with medial/odd-facet lesions. Given that the MACI procedure is technically easier and less time consuming, we consider it to be useful for treating patients with symptomatic chondral defects secondary to chondromalacia patellae.

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Session: Sports Traumatology: Cartilage Repair

Time: 14:30 - 16:00

Room: Rashid A

Abstract no.: 31587

EARLY RESULTS OF AUTOLOGOUS CHONDROCYTE IMPLANTATION FOR CARTILAGE INJURIES OF KNEE

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Introduction: Articular cartilage injuries can occur following acute high-impact injury or repetitive shear and torsional loads. Untreated lesions can lead to debilitating joint pain, dysfunction, and degenerative arthritis. Autologous Chondrocyte implantation (ACI) has been shown to provide hyaline-like repair tissue. The aim of this study was to assess the early functional results of gel based Autologous Chondrocyte implantation for focal chondral lesions of the knee. Materials and Methods: Between 2010 and 2011, 10 consecutive patients with ICRS Grade III and IV focal chondral lesions in knee of more than 1 sq.cm size were treated by Gel based ACI. All patients were evaluated with the Lysholm knee score, International Knee Documentation Committee (IKDC) subjective score. Three patients had Cartigram (T2 mapping MRI) at 6 months post OP. Results: 3 patients were female and 7 male. Mean age at the time of surgery was 26 years. Four patients had more than one lesion. There were a total of 14 lesions (10 patients) four each in patella, lateral and medial femoral condyle and 2 in the trochlea. Average follow up was 9 months (6 to 12 months). Lesions ranged in size from 1.5sq.cm to 4sq.cm. Lysholm knee score improved from an average 80.6 preoperatively to 91.8 at final follow up. Mean IKDC score was 51.3. MRI evaluation in three patients at 6 month follow up revealed homogenous repair tissue with complete defect filling, complete integration to border zone and intact surface. Conclusion: Early results of gel based Autologous Chondrocyte implantation are encouraging.

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Session: Sports Traumatology: Cartilage Repair

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Room: Rashid A

Abstract no.: 31414

DO META-ANALYSES REFERRING TO ONE-, TWO AND FIVE-YEAR FOLLOW-UP REVEAL A CLINICAL RELEVANT SUPERIORITY OF AUTOLOGOUS CHONDROCYTE IMPLANTATION OVER MICROFRACTURE IN THE TREATMENT OF FULL-THICKNESS CHONDRAL LESIONS OF THE KNEE?

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The objective of our study was to compare the clinical outcome after microfracture (MF), which is a common first-line treatment, and the technically demanding autologous chondrocyte implantation (ACI). Whereas MF is less-invasive and cost-effective, ACI holds great promise for future development because of its potential to regenerate hyaline-like tissue. Therefore, we scanned four electronic databases for controlled clinical trials or controlled prospective observational studies. We conducted random effects meta-analyses of head-to-head data using Cohen's d as the outcome measure of choice and we assessed heterogeneity with the I^2 index as well as publication bias with funnel plots and Kendall's tests. Our literature search revealed five study populations (eight papers) which referred to our eligibility criteria. Overall, 369 patients aged between 16 and 60 years with chondral defects of 1 to 10 cm² of size were available. They were allocated almost equally to both study arms, well matched regarding patient baseline characteristics. At one-year follow-up we computed 0.52 as overall best estimate of Cohen's d. After an increase to 0.74, at two-year follow-up it decreased to 0.42, at five-year follow-up. Nevertheless, this superiority of ACI over MF, representing a moderate or large effect, may not lead to the conclusion that ACI should be strictly preferred to MF in any case. Based on a rough calculation we revealed an expectable estimate of the differences between the mean treatment effects which only corresponded to minimal perceptible clinical improvement. Correct patient selection seems to be the key point to achieve the best possible outcome.

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Session: Sports Traumatology: Cartilage Repair

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Room: Rashid A

Abstract no.: 30984

**SECOND GENERATION CHARACTERIZED CHONDROCYTE
IMPLANTATION FOR THE TREATMENT OF CARTILAGE LESIONS IN
THE KNEE**

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Purpose: To evaluate short-term clinical and MRI outcome of the second generation characterized chondrocyte implantation (CCI) for the treatment of cartilage defects in the knee. Methods: Thirty-two patients aged 15–51 years with single International Cartilage Repair Society (ICRS) grade III/ IV symptomatic cartilage defects of different locations in the knee were treated with CCI using a synthetic collagen I/III membrane to cover the defect. Clinical outcome was measured over 36 months by the Knee injury and Osteoarthritis Outcome Score (KOOS) and Visual Analogue Scale (VAS) for pain. Serial magnetic resonance imaging (MRI) scans of 22 patients were scored using the original and modified Magnetic resonance Observation of Cartilage Repair Tissue (MOCART) system. Results: The patients included in this study showed a significant gradual clinical improvement after CCI. The MRI findings of this pilot study were considered to be promising. No signs of deterioration were observed. A complete or hypertrophic filling was observed in 76.5% of the cases at 24 months of follow-up. No preventive effect of an avital membrane on the occurrence of hypertrophic repair tissue was observed on MRI. Three failures were observed among the 32 patients until now (9.4%). Conclusions: This investigation provided useful information on the efficacy of this treatment. The short-term clinical and MRI outcome are promising. Large-scale and long-term trials are mandatory to confirm the results and the reliability of this procedure.

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Room: Rashid A

Abstract no.: 30820

MID-TERM RESULTS OF AUTOLOGOUS MATRIX INDUCED CHONDROGENESIS (AMIC) FOR TREATMENT OF CARTILAGE DEFECTS IN THE KNEE: THE AMIC REGISTRY

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Purpose: Autologous Matrix Induced Chondrogenesis (AMIC) is an innovative treatment for localized full-thickness cartilage defects. The purpose of this analysis was to evaluate the medium-term results of this enhanced microfracture technique for the treatment of chondral lesions of the knee. Methods and Materials: Participants consisted of a cohort of patients treated with AMIC® (Chondro-Gide®, Geistlich Pharma, Switzerland) in 5 study centers. The AMIC Registry is a multicenter program designed to longitudinally track changes in function and symptoms by the Lysholm score and VAS. Results: A series 57 patients in 5 study centers was enrolled. The average age of patients (19 females, 38 males) was 37.3 years (range 17 to 61 years). The mean defect size of the chondral lesions was 3.4 cm² (range 1.0 to 12.0 cm²). All defects were classified as grade III (n=20) to IV (n=37) according to the Outerbridge classification. Defects were localized at the medial (n=32) or lateral (n=6) condyle, at the trochlea (n=4) and at the patella (n=15). The followup period was 24 months. Most of the patient were satisfied with the postoperative outcome, reporting a significant (p<0.05) decrease of pain (VAS preop=7.0, 1 year postop.=2.9, 2 years postop.=2.0). Significant improvement (p<0.05) of the Lysholm score was observed as early as 12 months after AMIC and further increased values were notable up to 24 months postoperatively. Conclusions: AMIC is an effective and safe method of treating symptomatic full-thickness chondral defects of the knee. However, further studies with long-term follow-up are needed.

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Session: Sports Traumatology: Cartilage Repair

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Room: Rashid A

Abstract no.: 31506

KNEE ARTICULAR CARTILAGE RESURFACING USING SYNTHETIC SCAFFOLDS AND FRESH CONDYLAR AUTOGRAFTS WITH THREE YEARS FOLLOW UP

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Purpose: Traumatic and degenerative focal cartilage lesion affects millions of people. In addition to the knee pain, these conditions have a significant impact in the limitations of the patients' lives. Progress in medicine and biotechnology offers new options to treat these cartilage defects. The goal of this study was to evaluate clinical outcomes of pain, function and radiological (MRI and arthroscan) outcomes of cartilage repair and/or regeneration.
Method: 48 patients operated since 2008 with cartilage injuries grade III or IV in the femoral condyle, trochlea and patella, treated with microfracture, synthetic scaffolds and fresh autologous cartilage grafting. The patients were evaluated pre and postoperative using the subjective form scores for pain, knee function and quality of life. The results of objective evaluations were done by physical examination, X-Ray, MRI and arthroscan.
Results: With 36 months follow-up average the Visual Analogue Scale results have show significant reduction in pain after surgery (6,8 to 2,2) as well as improvement in the knee function (IKDC scores 27,4 to 54,5) and quality of life (SF-36 scores: Physical Component Summary 25,6 to 37,3; Mental Component Summary 45,7 to 50,9). In addition, the WOMAC total scores showed significant reduction (55,6 to 25,5) and imaging results indicate sustained cartilage regeneration from 6 to 18 months.
Conclusions: Synthetic scaffolds cartilage associated with microfracture and fresh autologous cartilage grafting is an effective treatment option for post-traumatic and focal cartilage lesions of the knee. However, a larger number of samples with longer term follow-up to evaluate cartilage microstructure are necessary.

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Session: Sports Traumatology: Cartilage Repair

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Room: Rashid A

Abstract no.: 31867

INSTANT CEMTROCELL, A NEW APPROACH BASED ON AUTOLOGOUS CHONDROCYTE IMPLANTATION FOR THE TREATMENT OF CARTILAGE LESIONS

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Implantation of autologous chondrocytes with a cell density of 106/cm² (MACI®) is one of the most used techniques for the treatment of cartilage defects. To improve the results of MACI, we have developed a modification (Instant Cemtrocell: ICC) increasing the number of cells implanted in the lesion at least 5-fold times/cm². Methods: 48 patients with chondral defects (mean age: 33,47±10,67 years; 35 male/13 female) were treated in our unit between 2010 to 2011. During cell implantation, the membrane was cut according the size/ shape of the injury and the whole volume of cells were seeded. Patients were evaluated by age, sex, defect location, affected limb, number/type of previous surgeries, mobility after ICC implantation and time of sick leave. According the pain, the patients were grouped in 3 categories: 0-3 (slight pain/discomfort); 4-6 (moderate pain/not interfere with normal life) and 6-10 (severe pain/interferes with normal life). MRI for cartilage markers (proteoglicans) at 6/12 month after implantation was performed. Results: Location of lesions: 75% knee; 25% ankle. In all cases the intensity of the pain was statistically higher before implantation than after the surgery. Before surgery, all patients had limited mobility. After implantation, the mobility was completely recovered in 43 cases (90%) while in 5 patients (10%) the last flexion degrees were missing. In 70% of cases the sick leave period was less than 6 months. In all cases MRI showed the formation of novel tissue (proteoglican extracellular matrix). Conclusion: Instant Cemtrocell is a promising technique to treat cartilage defects.

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Room: Rashid A

Abstract no.: 32870

IS MICRODRILLING AND ATELOCOLLAGEN GEL AS A SINGLE STAGE ARTHROSCOPIC CARTILAGE REPAIR PROCEDURE EFFECTIVE FOR CARTILAGE DEFECTS IN THE KNEE?

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Purpose: A novel single-stage approach using arthroscopic microdrilling and atelocollagen/fibrin-gel application is employed for cartilage repair of the knee. The aim of our study was to investigate the clinical results and repair tissue quality after this technique. **Materials and Methods:** A retrospective case-series of ten patients (mean-age 38y) with symptomatic chondral defects in the knee who were treated arthroscopically with microdrilling and atelocollagen application was analyzed. All defects were ICRS grade III or IV and the sizes were 2-8 cm² intraoperatively. For the clinical assessment the Lysholm score was assessed preoperatively and at 2 year follow-up. All patients underwent morphological MRI and quantitative T2*(T2-star)-mapping. The magnetic resonance observation of cartilage repair tissue (MOCART) score was assessed. **Results:** The Lysholm score improved from 51.7±27.1(mean±standard deviation) pre-operatively to 81.3±24.6 at 2-year follow-up (p<0.05). The mean T2* relaxation-times for RT and native cartilage were 29.9±14.1 and 29.7±8.6 respectively. However more extreme values were observed in RT (range 13-50 ms) in comparison to native cartilage (range 18 to 39 ms). The mean MOCART score at 1 year follow-up was 70.4±20.2 ranging from 15-95. The MOCART on patella lesions was similar to lesions in other locations: 73.3±11.7 and 68.1±25.5 respectively. **Conclusion:** An arthroscopic single stage procedure using microdrilling in combination with atelocollagen gel and fibrin-glue can provide satisfactory clinical results at 2-year follow-up. The morphological MRI shows good cartilage defect filling and the biochemical MRI (T2*-mapping) suggests a repair tissue composition similar to the surrounding native cartilage (indicative of hyaline like repair tissue).

Date: 2012-11-29

Session: Sports Traumatology: Cartilage Repair

Time: 14:30 - 16:00

Room: Rashid A

Abstract no.: 33190

USE OF HOMING MOLECULES SDF-1 AND SPHINGOSINE IN ISOLATED CARTILAGINOUS DEFECTS AS AN ADJUNCT IN ARTICULAR CARTILAGE REPAIR

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Introduction: Articular cartilage lesions are difficult to repair. Resulting fibrocartilage (mainly collagen type-I) from microfracture repair is suboptimal to native articular cartilage (mainly collagen type-II). Stromal-derived growth factor1 (SDF1) and sphingosine-1-phosphate (S1P) are chemoattractants having associations with cells of hematopoietic lineage. We believe introducing SDF1 and S1P to cartilage defects via coated scaffolds will improve intrinsic recruitment of mesenchymal stem-cells (MSCs), repairing the defect with cartilage more consistent with native articular cartilage. Methods: MSCs were cultured and plated onto transwell-membranes, tested with: SDF1 or S1P (three concentrations), -Control (serum-free media), or +Control (serum). Incubation allowed for cell-migration toward agents and migrant cells were counted to determine optimal concentration. Collagen scaffolds were coated with SDF1 and/or S1P using dip-coating process. 40 Sprague-Dawley rats underwent bilateral medial-parapatellar arthrotomy. 1.6mm circular defects were created down to bleeding bone. A scaffold was placed in one defect, and four study groups (n=10) were created: SDF1, S1P, SDF1+S1P, or nothing. Five rats/group were sacrificed at four or eight weeks post-implantation for histological analysis of healing, using modified-O'Driscoll and Pineda scores. Results: In-vitro results demonstrated significant homing of MSCs (optimal: 10µM for S1P and 10-100ng/mL for SDF1). In-vivo results showed that compared to defect-alone, both SDF1 and S1P-coated scaffolds resulted in robust resurfacing of defects with hyaline-blue, smooth surfaces. Defects-alone were characterized by clot-filled tissue, irregular surfaces, and cyst-formation. Conclusions: We successfully demonstrated strong, dose-dependent chemoattraction of SDF1 and S1P on marrow-derived MSCs and believe such a strategy could be easily incorporated into arthroscopic surgery during microfracture.

Date: 2012-11-29

Session: Sports Traumatology: Anterior Cruciate Ligament & Posterior Cruciate Ligament

Time: 17:00 - 18:30

Room: Rashid A

Abstract no.: 31037

QUALITY OF LIFE AND CLINICAL OUTCOME COMPARISON OF SEMITENDINOSUS AND GRACILIS TENDON VERSUS PATELLAR TENDON AUTOGRAFTS FOR ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION AN 11-YEAR FOLLOW-UP OF A RANDOMIZED CONTROLLED TRIAL

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Background: There are still controversies about graft selection for primary ACL reconstruction. Methods: From June 1999 to March 2000, 64 patients were included in this prospective study. A single surgeon performed primary arthroscopically assisted ACL reconstruction in an alternating sequence. In 32 patients ACL reconstruction was performed with hamstring tendon autograft while in the other 32 patients anterior cruciate ligament reconstruction was performed with patellar tendon autograft. Results: At 11-year follow-up, no statistically significant differences were seen with respect to Lysholm score and Short Form-36, KT-1000 arthrometer laxity testing, anterior knee pain, single-legged hop test, or IKDC classification results. Positive pivot shift test (1+) has been significantly more frequent in patellar tendon group ($P = .036$). 22 patients (81%) in the STG group and 18 patients (72%) in the PT group were still on their pre-injury level of activity. Graft rupture occurred in 2 patients from the hamstring tendon group (6%) and in 4 patients from the patellar tendon group (12%). The grade B and C abnormal radiographic findings were seen in 84% (21/25) of patients in the PT group and in 63% (17/27) of patients in the STG group ($P = .008$). Conclusions: Hamstring and patellar tendon grafts provided good subjective outcomes and objective stability at eleven years. Positive pivot shift test has been significantly more frequent in patellar tendon group. No significant differences in the rate of graft failure were identified. Patients with patellar tendon graft had a greater prevalence of osteoarthritis at eleven years after surgery.

Date: 2012-11-29

Session: Sports Traumatology: Anterior Cruciate Ligament & Posterior Cruciate Ligament

Time: 17:00 - 18:30

Room: Rashid A

Abstract no.: 32828

**RECONSTRUCTION OF THE ACL USING NEOLIGAMENTS JEWELACL–
SYNTHETIC LIGAMENT - REPORT ON A NEW TECHNIQUE**

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This paper presents the technique used in anterior cruciate ligament (ACL) reconstruction using synthetic ligament Neoligaments Jewel ACL. The biologic material used in autograft and allografts is subject of continuous debate. Therefore some authors suggest using synthetic materials. We report on 20 patients operated using Neoligaments –Jewel ACL synthetic ligament with a minimum of 6 month follow up. If arthroscopy confirmed ACL avulsion from the femoral attachment with preserved natural ligament continuity then JewelACL was used as an augmentation device, if however arthroscopy confirmed only residual ACL tissue or stumps, a combined Jewel ACL and autograft reconstruction was preferred. In both scenarios we used X-ray control (C-Arm) to help in establishing the position of the femoral and tibial tunnels in addition to arthroscopic landmarks. We feel that the use of C-Arm control greatly improves accuracy and reproducibility of tunnel placement. Out of 20 patients 16 underwent ACL reconstruction with JewelACL as augmentation device and 4 as combined JewelACL and autograft reconstruction. In these cases we used ST graft which was placed inside tubular structure of the JewelACL ligament. In both techniques ligament was fixed in femoral and tibial tunnels with special soft thread titanium interference screws. After six months patients were assessed by Biodex Isokinetic Dynamometer and clinically. Clinical results were excellent and no laxity was found in any case. They all return to pre-op activity levels.

Date: 2012-11-29

Session: Sports Traumatology: Anterior Cruciate Ligament & Posterior Cruciate Ligament

Time: 17:00 - 18:30

Room: Rashid A

Abstract no.: 31363

RELATION BETWEEN SECOND-LOOK ARTHROSCOPIC FINDINGS AND CLINICAL RESULTS AFTER DOUBLE BUNDLE ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

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This study examined the relationship between the findings of a second-look arthroscopy and clinical results in double bundle ACL reconstruction using hamstring tendons fixed with a Ligament Plate. Twenty eight cases were retrospectively reviewed. In second-look arthroscopy, the AM bundle and PL bundle of the grafts were evaluated based on the tension, rupture and synovial coverage. The correlation between the arthroscopic findings of the grafts and the instability tests was evaluated. The AM graft was evaluated as being taut in 89.3% and lax in 10.7%, and the PL graft was assessed as being taut in 71.4% and lax in 28.6% according to the tension. The AM and PL grafts were evaluated as 'no rupture' in 78.6% and 'partial rupture' in 21.4%. There was no 'complete rupture' in any graft. The AM grafts were found to be good in 53.6%, fair in 35.7% and poor in 10.7%; the PL grafts were assessed as good in 50.0%, fair in 28.6% and poor in 21.4% according to the synovial coverage. The AM graft tension showed statistically significant results regarding both the Lachman test($p=0.743, p < 0.001$) and degree of rupture($p=0.438, p=0.020$). The PL graft tension showed statistically significant results regarding both the pivot shift test($p=0.548, p=0.003$) and the degree of rupture($p=0.663, p < 0.001$). Double bundle ACL reconstructions using hamstring tendons show good biological and clinical results. The graft tension and the degree of rupture show a statistically significant relationship to the stability of the reconstructed joint. On the other hand, the synovial coverage did not show a significant result.

Date: 2012-11-29

Session: Sports Traumatology: Anterior Cruciate Ligament & Posterior Cruciate Ligament

Time: 17:00 - 18:30

Room: Rashid A

Abstract no.: 31236

CLINICAL AND FUNCTIONAL OUTCOMES OF TRANS-TIBIAL DOUBLE BUNDLE PCL RECONSTRUCTION

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Introduction: Femoral double bundle PCL reconstruction aims to restore the knee kinematics similar to the native knee joint. We report the results of a single surgeon prospective series assessing the functional and objective outcomes after double bundle PCL reconstruction. Methods: Lysholm, IKDC scores, Anteroposterior laxity measurement at 30° and 90° knee flexion using the Rolimeter (Aircast, USA®) and complications were collected prospectively on all the patients. Results: 28 patients (25 males and 3 females) underwent the above procedure with an average follow-up of 32 months (range 12-60 months). Mean Lysholm and IKDC scores were significantly better (p value 0.03 and 0.01 respectively). Rolimeter findings at 30° and 90° knee flexion were significantly better (p value 0.00 for both) at the final follow-up visit. There were no reruptures or any neurovascular complications noted. 1 patient developed rapid onset osteoarthritis post PCL reconstruction requiring total knee arthroplasty. Conclusion: Trans-tibial double bundle PCL reconstruction achieves significantly better clinical and objective outcomes with no failure in short to medium term, and compares favorably with the senior authors' previous single bundle reconstruction technique.

Date: 2012-11-29

Session: Sports Traumatology: Anterior Cruciate Ligament & Posterior Cruciate Ligament

Time: 17:00 - 18:30

Room: Rashid A

Abstract no.: 32759

SELF-HEALING OF ANTERIOR CRUCIATE LIGAMENT RUPTURE BY DYNAMIC INTRALIGAMENTAL STABILIZATION

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Introduction: The anterior cruciate ligament (ACL) has limited self-healing potential. To date therefore torn ACLs have been removed and replaced by a graft. We developed a Dynamic Intraligamental Stabilization (DIS) technique that successfully induced self-healing of ACL ruptures in a large animal model, allowing retention of the torn ACL. Encouraged by this result, we adapted the DIS system for treatment of the human knee. Methods: In a prospective study, the clinical and radiological results in 40 patients with acute ACL rupture (15 women, 25 men, mean age: 29,3 years; (18- 51 years)) were followed for at least 12 months following DIS. Knee function was documented applying the Lysholm, Tegner and IKDC scores. AP translation was measured with a standardized rolimeter. The healing course was documented radiologically by magnetic resonance tomography (MRI) at 3, 6 and 12 months. Results: All patients reported normal knee joint function prior to ACL rupture, with a Lysholm score of 100, a Tegner score of 5,8 (4-9). Twelve months postoperative all patients still had a Lysholm score of 100, a Tegner score of 5.5 (4-9) and a IKDC of 95 (92-100). The AP translation was + 2.2 mm (-3 to +4 mm) compared to the healthy contralateral side. All MRI studies showed a continuous ligamental structure in the ACL region after 12 months (Kühne grad A und Howell grad 1). Conclusion: DIS created the mechanical conditions necessary for self-healing of the ACL, allowing restoration of near normal knee function in physically active patients.

Date: 2012-11-29

Session: Sports Traumatology: Anterior Cruciate Ligament & Posterior Cruciate Ligament

Time: 17:00 - 18:30

Room: Rashid A

Abstract no.: 31601

BIOMECHANICAL OUTCOMES AFTER BIO-ENHANCED ACL REPAIR AND ACL RECONSTRUCTION ARE EQUAL IN A PORCINE MODEL

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Study question: The objective of this study was to compare the biomechanical outcomes of a new method of ACL treatment, bio-enhanced ACL repair, with the current gold standard, ACL reconstruction, in a large animal model. Methods: 24 pigs underwent unilateral ACL transection and were randomly allocated to receive either bio-enhanced ACL repair, allograft (bone-patellar tendon-bone) reconstruction, or no further treatment. The structural properties and anteroposterior laxity of knees were measured 15 weeks postoperatively. Results: After 15 weeks, bio-enhanced ACL repair and ACL reconstruction produced superior biomechanical outcomes to ACL transection. However, there was no significant difference between bio-enhanced ACL repair and ACL reconstruction for failure load ($p=0.4745$), failure displacement ($p=0.4217$), or linear stiffness ($p=0.6327$). There were no significant differences between the two surgical techniques in anteroposterior laxity at 30° ($p=0.7947$), 60° ($p=0.6270$), or 90° ($p=0.9008$). Conclusion: Biomechanical outcome at 15 weeks after bio-enhanced ACL repair is equal to ACL reconstruction in a large animal model.

Date: 2012-11-29

Session: Sports Traumatology: Anterior Cruciate Ligament & Posterior Cruciate Ligament

Time: 17:00 - 18:30

Room: Rashid A

Abstract no.: 31603

EFFECTIVENESS OF ANTERIOR CRUCIATE LIGAMENT INJURY PREVENTION TRAINING PROGRAMS: A META-ANALYSIS OF CONTROLLED TRIALS

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Study Question: The objective of this study was to systematically review the literature on ACL injury prevention programs. Methods: A systematic review using the online databases PubMed, MEDLINE, EMBASE, CINAHL, and CCTR. Data on study design and clinical outcomes were extracted independently and in triplicate. After assessment of between-study heterogeneity, DerSimonian Laird random effect models were used to calculate pooled risk ratios and to estimate the Number Needed to Treat, i.e. the number of patients that have to be treated to avoid one ACL tear. Results: The pooled risk ratio was 0.38 (95%CI 0.20 to 0.71), showing a significant reduction of the risk of ACL ruptures in the prevention group ($p=0.003$). The NNT was in the range of 5 and 187. Stratified by gender the pooled RR for females was 0.48 (95%CI 0.26 to 0.89) and for males RR 0.15 (95%CI 0.08 to 0.28). Conclusion: This study produced strong evidence for a substantial beneficial effect of ACL prevention, with risk reduction of 52% in the females and 85% in males.

Date: 2012-11-29

Session: Sports Traumatology: Anterior Cruciate Ligament & Posterior Cruciate Ligament

Time: 17:00 - 18:30

Room: Rashid A

Abstract no.: 30733

ROLE OF HIGH TIBIAL OSTEOTOMY WITH ACL RECONSTRUCTION IN ACL-DEFICIENT VARUS KNEES WITH MEDIAL COMPARTMENT OA: SYSTEMATIC REVIEW

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INTRODUCTION: Young, active patients with symptomatic ACL-deficient knees, varus malalignment and symptomatic medial compartment osteoarthritis are often a challenge to manage. The primary aim of this study was to determine improvements in knee pain and functional stability in patients undergoing this simultaneous procedure for instability and medial compartment OA symptoms. Secondary aims were to assess return to sporting activity and delay of radiological OA progression. **METHODS:** A literature search on MEDLINE(Ovid), EMBASE and the Cochrane database was performed. Studies in English, patients aged 18-50 years and undergoing a simultaneous HTO with ACL reconstruction using either an autograft or allograft hamstring or bone-patellar-bone graft were included. Studies with patients with concomitant PCL, MCL, LCL or PLC injuries, small studies (n <6) and studies looking at patients with ACL ruptures with varus knees, but with no medial compartment symptoms were excluded. **RESULTS:** The 6 studies that met the eligibility criteria demonstrated that pain, subjective and objective knee stability had improved post-operatively. A high degree of variability was reported for major complications. The valgus tibial osteotomy may reduce the progression of medial compartment OA, at the expense of increasing radiographic lateral compartment OA. **CONCLUSIONS:** Simultaneous HTO and ACL reconstruction offers patients a procedure that can improve knee pain and functional stability. Patients are often able to return back to sporting activity, but rarely to their pre-injury or competitive level. The combined procedure has the advantage of only one rehabilitation period and should be advocated early before the onset of severe medial compartment OA.

Date: 2012-11-29

Session: Sports Traumatology: Anterior Cruciate Ligament & Posterior Cruciate Ligament

Time: 17:00 - 18:30

Room: Rashid A

Abstract no.: 32603

COMPUTER ASSISTED ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION ELABORATE TO NAVIGATED ANATOMIC DOUBLE BUNDLE REPAIR

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Introduction: Correct graft-positioning has proven most important in ACL-reconstruction warranting avoidance of stresses before the graft is strengthened by revascularisation, whichever fixation used. In fresh cases identifying which part of the peel-off corresponds to biomechanically relevant attachment points is difficult. Inveterated cases show misleading reparative alterations. Arthroscopic techniques only allow determining of topographical coincidence of two structures but no stereotactic guidance. Experimental studies and persisting pivot shift in otherwise successful single-bundle repairs advocate double-bundle ACL-reconstructions. Methods: We have used software for navigated ACL-repair with pedicled lateral patellar tendon grafts since 2007 and since 2010 we routinely perform computer-assisted anatomic double-bundle repairs with pedicled full-length semitendinosus tendon grafts biologically fixed in divergent tunnels. Results: 56 navigated single-bundle reconstructions operated before end 2009 followed up to 4 years show Lysholm-scores improved from 63 to 94 points in average and IKCD-scores from gradeD(28), gradeC(23) and gradeB with crippling giving-ways(5) improved to normal and nearly normal knees (gradeA+B=50). The six remaining (gradeC) had persisting pivot-shift preventing full muscle rehabilitation, one after new football injury following full recovery. Preliminary results of our navigated anatomic double-bundle reconstructions since beginning 2010, managed without bracing, so far confirm functional superiority in rotational stability and return to physical activity. Discussion: computer-assisted navigation allows overcoming difficulties in precise graft positioning remaining with arthroscopic ACL-repairs and appears particularly helpful for anatomic double bundle reconstruction. It controls relation to isometricity and tunnel overlapping and allows obtaining a full rotational stability giving the patient the sensation of an intact normal knee.

Date: 2012-11-29

Session: 14 - Mini Symposium - Hand: Scaphoid Fractures

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 32088

UNCEMENTED IVORY PROSTHESIS FOR THE TREATMENT OF TRAPEZIO-METACARPAL OSTEOARTHRITIS OF THE THUMB. A RETROSPECTIVE STUDY OF 90 PROSTHESIS WITH A MINIMUM FIVE YEAR FOLLOW-UP

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The treatment of arthritis of the basal joint of the thumb is still a subject of controversy. Total arthroplasty is often used, since De la Caffinière. Various prosthesis cemented and uncemented have been described with satisfactory results reported. However, mechanical complications occur and revisions may be required. We report the results of 90 uncemented Ivory prosthesis (87 patients, mean age 61 years (41-82)) implanted between 2002 and 2006, after failure of the conservative treatment, with only primary arthritis (Dell stage II -34 cases and III -56 cases) without STT arthritis. The surgical technique was consistent with all study patients. The minimum follow-up period was 60 months (61-100 months). 74 patients had good or very good results. 9 patients reported satisfactory results. Most of the patients were satisfied and pain free. Mobility was increased including dorsal extension of the first metacarpal. There were 7 complications requiring surgical revision: Unsealing cup: 2 cases, trapezium fracture: 1 case, prosthesis dislocation: 3 cases, fracture of a long neck: 1. Our results are similar to previously published reports with 8 % of patients requiring revision. Technical issues appear to be the primary cause of complications. Implantation of TM prosthesis is still a difficult surgical procedure which justifies a very strict technique and selected indications.

Date: 2012-11-29

Session: 14 - Mini Symposium - Hand: Scaphoid Fractures

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 32623

ISIS TRAPEZIO METACARPAL PROSTHESIS. A REVIEW OF 39 CASES WITH 3 YEARS FOLLOW UP

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Since Monaco's congress in 2011, prosthetic arthroplasty has become the reference treatment for trapezo-metacarpal joint arthritis. We are reporting upon 39 ISIS trapezo metacarpal prostheses which include a 3 years follow-up. 29 patients had no pain at follow-up. The other 10 had an average pain at 2.6/10. Kapandji index was 9,38/10. Grip strength (Jamar) was 25 kg on the operated side and 24 kg in the other side and the Key-pinch was the same on both sides (6,15 operated saide to 6,12 kg opposite side). Quick DASH score was 29,09/100. In most cases (37 cases) patients were satisfied or very satisfied (95%). On the 39 prostheses, we report 3 osteolysis at the base of first metacarpal (8%) and in one case at first metacarpal and trapezium (2 %) but without pain or loosening of range of motion. We had no dislocation. Survival of the prosthesis is 100% at the follow-up. The two main complications of trapezio metacarpal prosthesis remain instability with dislocation and loosening. We propose ISIS implant with retentive cup (no possiblity of dislocation), and a screwed cup with strong bone implantation in trapezium. The reliability of ISIS and the rapidity of the results are major arguments for this prosthesis in opposition with trapezectomy but also with other trapezo-metacarpal prostheses.

Date: 2012-11-29

Session: 14 - Mini Symposium - Hand: Scaphoid Fractures

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 31619

LONG TERM OUTCOMES FOR TRAPEZIECTOMY AND WEILBY INTERPOSITION

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Aim: This study reports long term functional and satisfaction outcomes following Trapeziectomy and Weilby interposition of Flexor Carpi Radialis. **Methods:** 43 cases were retrospectively reviewed at a minimum of 5 years from operation. It was possible to assess 36 cases subjectively and 24 cases objectively. Mean age was 63.7; the majority of patients (33vs.10) were female. **Results:** Mean DASH score was 25.2 and mean PEM score was 34.5. MHO rating of function was 67.9. Mean grip strength was 43.3 pounds, key and pulp pinch were both 10.1 pounds. There was no significant difference in these variables or range of motion between the operated and non-operated hand. Mean pain rating on a VAS was 1.7 – this was significantly lower in the operated hand than in the non-operated hand in patients who suffer from bilateral disease ($p=0.041$). Mean satisfaction rated by VAS was 9.2 and 92% of patients would have the operation again. **Discussion:** In patients who had unilateral disease, function, satisfaction and pain in the operated hand appear to be similar to that of the unaffected hand. In bilateral disease, function of the operated hand was not found to be significantly better than the non-operated hand, however pain was noted to be significantly reduced in the operated hand. **Conclusion:** Trapeziectomy with Weilby interposition appears to continue to allow similar function to an unaffected hand in unilateral disease at 5 years. In patients with bilateral disease, although no functional advantage was noted, this procedure continues to be beneficial in relieving pain.

Date: 2012-11-29

Session: 14 - Mini Symposium - Hand: Scaphoid Fractures

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 31334

LONG-TERM FOLLOW-UP OF TRAPEZIECTOMY WITH ABDUCTOR POLLICIS LONGUS TENDON INTERPOSITION ARTHROPLASTY OF THE TRAPEZIO-METACARPAL JOINT

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Purpose: To evaluate the long-term clinical and radiographic outcome of trapeziectomy with ligament reconstruction using abductor pollicis longus interpositional arthroplasty for moderate to severe trapezio-metacarpal joint osteoarthritis (Eaton stages III-IV). Methods: We evaluated 13 patients (15 thumbs) who underwent trapeziectomy and ligament reconstruction using abductor pollicis longus tendon for end-stage trapezio-metacarpal joint osteoarthritis at an average follow up of 15 years. Subjective clinical outcomes evaluated included visual analog scale scores and disability of arm shoulder and hand score questionnaires. Objective clinical evaluation included lateral pinch and grip tests and a range of active and passive thumb movements. All patients underwent a radiographical assessment by two independent senior radiologists. In all cases the operative thumbs were compared to the non-operative sides. Results: At a mean of 15 years post operation (range 15-17yr) there was no statistical difference between the operated and non-operated hands with regards to grip and pinch strength. In all cases CMC and MCPJ range of motion in the operative hand was either equal to or greater than non-operative counterparts. Mean visual analogue scale score was 2.13 and mean DASH score was 16.85. Mean carpal height was 0.52 and mean trapezial space ration was 0.163. There were no early or late complications recorded and no revision surgery was required. Conclusion: It is the opinion of these authors that abductor pollicis longus tendon interposition arthroplasty is able to provide high-quality long term results for patients who suffer from moderate to severe trapezio- metacarpal joint osteoarthritis

Date: 2012-11-29

Session: 14 - Mini Symposium - Hand: Scaphoid Fractures

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 32117

DOES THE INSERTION OF A PYROCARBON SPACER IMPROVE A PATIENT'S OUTCOME AFTER TRAPEZIECTOMY? – A STUDY BY SUBJECTIVE ASSESSMENT.

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Background: Trapeziectomy for first carpometacarpal joint arthritis is a standard procedure with good outcome, but this technique carries the risk of shortening of the thumb ray (1). Trapeziectomy with interposition of a pyrocarbon spacer may be a worthwhile alternative technique (2). We compared the outcome of trapeziectomy alone with trapeziectomy and insertion of a pyrocarbon spacer. Methods: Between 2006 and 2010, 72 patients underwent trapeziectomy surgery (by single surgeon). Forty-five patients underwent trapeziectomy alone (Group1). Of the remaining 27 patients, 14 (Group2) had a pyrocarbon spacer inserted post-trapeziectomy. In the other thirteen patients the trial spacer was unstable and hence not inserted. The outcome was assessed with a subjective questionnaire rated for pain, strength and stiffness. Subjective assessment of grip strengths with certain daily activities was done. The preoperative score was calculated retrospectively based on the patient's memory. Results: The mean age of the patients was 64. Of these 55 were female. The mean follow-up period was 37 months for Group1 and 11 months for Group2 (6-21months). Two patients in Group1 had re-operation with tendon insertion. One patient in Group2 had removal of the spacer. Eighty-five percentage in both groups had a good to excellent outcome score. Although there was no statistical significance, there was a trend (in Box and whisker plot) towards increased subjective pincer and key grip strength in Group 2. Conclusion: The short term outcome of pyrocarbon spacer insertion compared to trapeziectomy alone group was similar but with a possible increase in Key and pincer grip strength.

Date: 2012-11-29

Session: 14 - Mini Symposium - Hand: Scaphoid Fractures

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 32972

SCAPHOTRAPEZIUMTRAPEZOID ARTHROSIS: OUR RESULTS OF TREATMENT WITH THE SCAPHOID TRAPEZIUM PYROCARBON IMPLANT

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INTRODUCTION: Symptomatic scaphotrapeziotrapezoid (STT) arthritis, is frequently observed by the hand surgeon. Operative treatment consists primarily of fusion of the STT joint, although alternatives include trapeziectomy, fibrous arthroplasty, and prosthetic replacements. The current study presents the results of an interposition arthroplasty using a scaphoid trapezium pyrocarbon implant (STPI, BIOProfile). The aim of this prosthesis is to restore the scapho-trapezial mobility, preserving the length of the scaphoid, without destabilising the carpal bones . **OBJECTIVES:** To show the results of the treatment of the STT arthrosis with a pyrocarbon implant. **METHODS:** Fourteen cases of STT arthrosis were studied with a mean follow-up of 28 months (range: 10-52 months). Average age was 68 (range, 57 to 74). Surgical indication was pain refractory to medical treatment and loss of wrist mobility, specially radial deviation and dorsal flexion and .Preoperative data collected included VAS pain scale, Scaphotrapeziumtrapezoid arthrosis on X-rays, mobility and strength. Postoperative data were collected at postoperative months 1, 3, 6, and 12. **RESULTS:** Following surgery, VAS pain scores improved significantly and most patients had minimal restrictions in function. Mean grip strength was 72% and pinch strength 75% compared to the non-operated side. Overall, 80% of patients were highly satisfied with the results of their surgery. Angular measurements on radiographs showed a slight modification in DISI without functional repercussion. **CONCLUSION:** The results of this study suggest that STPI interposition arthroplasty may be a good alternative to STT fusion for STT arthritis. In cases of failure, it is possible to use any other revision procedure.

Date: 2012-11-29

Session: 19 - Mini Symposium - Hand: Anatomy and Examination of Triangular Fibrocartilage Complex & Distal Radioulnar Joint

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 32575

JOINT REPLACEMENT SURGERY OF THE HAND – AN ALTERNATIVE OPTION?

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Problem: Because a lot of alternative operative procedures in these cases exists (Arthrodesis, partial arthrodesis, denervation, proximal rowcarpectomy), arthroplasty is not widely used, an arthroplasty is done only in up to 5% in wrist joints. Method: A cementfree Zirkoniumoxid - Keramik prosthesis was used for endoprosthetic replacement in the wrist joint. Results: The results of a multicenter study with a follow up of 69 patients (70%) out of 98 patients, who received an arthroplasty of the wrist joint, are presented. The mean follow up was 4 years. The average value of the DASH Score was 35,9 (DASH Score: 0 - points = optimale Function, no handicap; 100 - points = bad Function, maximum handicap). The average range of motion (extension/flexion) was 65 degree. There had been two luxations, treated conservatively after closed reduction by cast immobilisation and two loosening, requiring a revision arthroplasty. A secondary arthrodesis and a revision because of an infection was necessary in two cases. Two patients fall on their hand (bicycle accident, work at home): in one case a cemented revisionarthroplasty was done, in the other case an osteosynthesis with an corticocancellous bone graft was necessary. Discussion: The implantation of a prosthesis typically provides substantial function improvement. The development of cementfree prosthesis types seem to be very promising. Upon the definition of the indication, however, the compliance of the patient as well as the degree of physical strain is to be taken into account.

Date: 2012-11-29

Session: 19 - Mini Symposium - Hand: Anatomy and Examination of Triangular Fibrocartilage Complex & Distal Radioulnar Joint

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 31670

TOTAL WRIST ARTHROPLASTY: A REVIEW OF 21 CASES USING THE UNIVERSAL 2 PROSTHESIS

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Aim: This observational study presents our experience of 21 cases using the Universal 2 implant in total wrist arthroplasty. **Methods:** We prospectively assessed 21 consecutive cases of total wrist arthroplasty performed by one surgeon. Pre- and post-operative assessment of range of motion, as well as subjective functional and pain assessments were undertaken using the Disabilities of the Arm Shoulder and Hand (DASH) outcome measure and Patient Rated Wrist Evaluation (PRWE). Patients were clinically assessed for evidence of instability, dislocation or neurovascular injury at final follow up. Mean follow-up was 36.8 months for clinical assessment and 4.8 years for subjective assessment. Final radiographs were examined for evidence of implant loosening. **Results:** Mean range of motion in each direction increased significantly following the procedure; the mean flexion-extension arc was 52.9°. Mean DASH score and both pain and function subscales of the PRWE had significantly improved at follow-up. 3 Cases of superficial infection resolved with antibiotics, 2 cases of required manipulation under anaesthetic for stiffness and one required excision of a bony bridge. There were no cases of instability or dislocation. **Discussion:** In the hands of an experienced surgeon, the Universal 2 total wrist arthroplasty implant appears to produce a significant improvement in range of motion and functional outcome scales which is comparable to previous implants. The key advantage of this implant over previous designs appears to be a reduced rate of symptomatic or clinical joint instability. The small implant size and cementless design reduce bone loss and osteonecrosis.

Date: 2012-11-29

Session: 19 - Mini Symposium - Hand: Anatomy and Examination of Triangular Fibrocartilage Complex & Distal Radioulnar Joint

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 31177

OUTCOME OF PYROCARBON PROXIMAL INTERPHALANGEAL JOINT REPLACEMENT

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Aim:To assess the clinical and radiological outcome of patients who underwent PIPJ arthroplasty by Pyrocarbon implant. **METHODS:** A total of 26 PIPJ pyrocarbon replacements in 19 patients (10 female and 9 male, average age 63) were performed between 2004 -2011, with an average follow-up period of 3.5 years (6months-7 years). The preoperative diagnosis was O.A. in 10, R.A. in 4, and posttraumatic arthritis in 5 patients. The clinical outcome was assessed by range of motion (ROM); DASH, Likert and VAS score. Subsidence and migration was assessed radiologically. **RESULTS:** The average ROM improved from 400 pre-op to 700 post-op. Statistically significant improvement in post operative ROM was noted in arthritic group as compared to traumatic group ($p=0.001$). Average VAS score significantly improved in both groups from pre (Avg 8) to post op status (Avg 3) ($p<0.05$). DASH and Likert score also significantly improved for the arthritic group as compared to traumatic group. 90% patients in arthritic group had improved quality of life (QOL) as compared to only 40% in traumatic group. Average subsidence was 0.5mm for the entire cohort with no cases of radiological loosening. One case underwent revision and amputation for persistent stiffness. There were no cases of deep infection. Survival analysis showed 95% survival when revision was the end point. **CONCLUSIONS:** Excellent to good results was seen in 85% of patients who underwent PIPJ Pyrocarbon replacement for osteoarthritis and inflammatory arthritis. Significant pain relief, improved ROM and QOL was noted in arthritic group as compared to traumatic group.

Date: 2012-11-29

Session: 19 - Mini Symposium - Hand: Anatomy and Examination of Triangular Fibrocartilage Complex & Distal Radioulnar Joint

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 30873

FUNCTIONAL OUTCOME OF PLATING IN METACARPAL FRACTURES.

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Background: Fractures of metacarpals are common in young active adults. Studies on plate fixation of metacarpal fractures have however reported mixed results. The objective of this study was to prospectively evaluate clinical and functional outcome of metacarpal fractures managed by open reduction and internal fixation with miniplates. Material and methods : Fifty two metacarpal fractures in 25 patients were managed with open reduction and internal fixation with 2 mm and 2.5 mm steel and titanium mini plates. Final evaluation was done at 4 months or till union, whichever was earlier. The functional outcome after fracture treatment was assessed by calculating total active range of motion (TAM) using the Strickland's original classification system. Results: Overall end results of metacarpal plating was excellent in twenty-one patients (84%), good in two patients (8%), fair in one patient (4%), and poor in one patient (4%). Twenty-three (92%) patients regained range of motion $>220^{\circ}$. Major stiffness ($<180^{\circ}$) was noted in 2 patients with comminuted intra articular fractures. No significant difference in outcome was seen as regards type of plate used. Conclusion: With the application of sound surgical techniques and biomechanical principles good functional outcome can be achieved following plating of metacarpal fractures.

Date: 2012-11-29
Session: Hand: Reconstruction
Time: 14:30 - 16:00
Room: Rashid B

Abstract no.: 33094

CARPAL SCAPHOID PERCUTANEOUS SCREWING

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INTRODUCTION: Fractures of the scaphoid bone are still diagnosed late inspite of improvement of the methods of imaging. Largest part much remains discovery in the stage of pseudarthrosis. **OBJECTIVES:** We report a series of 30 cases between 2004 and 2009 involving recent fracture and pseudarthrosis of the scaphoid bone in adult treated by percutaneous screwing. **METHODS:** The mean age of our patients was 27 years. Our study comported 8 cases of recent fracture, and 22 cases of pseudarthrosis. According to Scherberger's classification of fractures, we reported: 3 cases type I, 4 cases type II, 18 cases type III , 5 cases type IV. We adopted the classification of Alnot. JY to classify the pseudarthrosis. **RESULTS:** The average delay of care by screwing of the scaphoid bone compared to the initial trauma was 15 days for recent fractures, 12 months for the pseudarthrosis. No postoperative immobilization has been made and the reeducation was started in the first week. Consolidation was achieved after a period of 10 weeks for recent fractures and 13 weeks for pseudarthrosis. The functional result was assessed according to the functional classification of Herbert and the Mayo score. We had 88% excellent and good functional outcomes. The anatomical results were assessed according to anatomical criteria of the listing of Herbert. Anatomical and radiological results are ranked excellent and good in 80% of cases. **CONCLUSION:** We believe that the carpal scaphoid percutaneous screw is a minimally invasive technique to improve time of consolidation compared to orthopedic treatment.

Date: 2012-11-29
Session: Hand: Reconstruction
Time: 14:30 - 16:00
Room: Rashid B

Abstract no.: 33072

ROLE OF REVERSE POSTERIOR INTEROSSEOUS ARTERY FLAP IN COVERAGE OF RAW AREAS OF HAND AND WRIST

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Introduction: raw areas on hand and wrist are a challenge to hand surgeons, especially with raw tendons, nerves, and bones. Reverse posterior interosseous artery flap can be used for coverage of raw areas on wrist and hand without affection on radial or ulnar arteries. Posterior interosseous artery flap based on posterior interosseous artery which derived from interosseous artery and distally anastomose with anterior interosseous artery and plexus around wrist. Patients and method: fifteen patients with traumatic raw areas were 9 on dorsum of the hand, 3 on volar of the wrist, and 3 for loss of web space, and they were 10 male and 5 were female, and their mean age was 23 years (range 17 – 45 years). These patients have soft tissue loss were the result of road traffic accidents, and gunshot. Results: two cases seen in congestion in second day, the results graded as good in 13 cases(86.6%), and satisfactory in 2 cases(13.3%).(Tahseen, et al 2007). Conclusion: posterior interosseous fasciocutaneous flap (PIF) is a versatile and reliable option for the challenging problems of hand soft-tissue coverage.

Date: 2012-11-29
Session: Hand: Reconstruction
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Room: Rashid B

Abstract no.: 33073

DEPRESSED ARTICULAR FRACTURES OF THE PROXIMAL INTERPHALANGEAL JOINT: TREATMENT USING A NOVEL FUNCTIONAL SURGICAL APPROACH

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INTRODUCTION: Depressed fractures of the PIP joint present a difficult challenge. The technical challenge of reconstruction is compounded by the small bony fragments which can be very difficult to piece together. We describe a novel technique which involves a functional surgical approach, internal fixation and early mobilisation. **PATIENTS AND METHODS:** The approach involves a curved dorsal incision and an approach between the central and lateral slips of extensor mechanism. A small cortical window is opened using a 2mm osteotome in the metaphyseal bone at the base of the middle phalanx. A hypodermic needle is introduced through the cortical defect and used to elevate the depressed articular fragments. The piece of bone graft is then placed back in the donor defect and impacted deep behind the reduced articular fragments. Finally, the fragment is stabilised with a 1.0mm lag screw. Therapy is started around 7 to 10 days. **RESULTS:** This procedure was done on 8 fractures in 7 patients. They were done under axillary anaesthesia as a day case procedure. The average delay between injury and surgery was 6.5 days. The median tourniquet time for this procedure was 32 minutes. All fractures healed clinically and radiologically. With a median follow-up of 19 months, the median range of motion was 82.5 degrees and a median grip strength 88%. **CONCLUSION:** Our technique involves a safe surgical exposure which provides a direct view of the joint surface for articular reduction, stable fixation and early mobilisation with good functional outcome.

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Room: Rashid B

Abstract no.: 31470

OPERATIVE TREATMENT FOR FUNCTIONAL RECOVERY OF REPLANTED FINGERS AT THE PIP OR MP JOINT LEVEL.-OPERATIVE TREATMENT USING EXTERNAL FIXATOR-

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Introduction: The key for functional recovery of a replanted finger is successful primary reconstruction, proper planning for secondary reconstruction and aggressive rehabilitation. We present the management of amputated fingers at the proximal phalangeal or the PIP/MP joint level. For this purpose, we used the external fixator such as compass PIP joint hinge external fixator™ (CPJH) and modified Ilizarov mini fixator™ (Global hinge fixator : G fixator) to allow early active motion. METHODS : Thirty fingers were included, and the injuries included clean cut, degloving and crush injuries. Primary FDP reconstruction was performed with a modified Kessler suture (2 strands) or Yoshizu suture using the Tsuge strand (4 strands). Normally both radial and ulnar digital arteries were anastomosed and also bilateral nerve coaptation was performed. RESULTS : After anticoagulant therapy, we applied an external fixator, such as a CPJH or G fixator for joint traction, to allow both active and passive ROM of the joint (Eleven cases). The structure of the G fixator for joint ROM was unique. We can use this fixator for solid bone fixation at the primary operation and change its structure 2 to 4weeks later to make it suitable for ROM exercises without taking off the wires. In ten digits, additional tenolysis of the flexor tendons was performed, and costo-chondral grafting was performed in four cases. The average TAM of the replanted finger was 55.3 %. Functional assessment by the Japanese society for the surgery of the hand (JSSH) yielded a score of 63.5 points (Good).

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Abstract no.: 31169

TREATMENT OF SCAPHOID NONUNION BY PRONATOR QUADRATUS PEDICLE BONE GRAFT WITH IPSILATERAL DISTAL RADIUS CANCELLOUS BONE GRAFT AND INTERNAL FIXATION WITH ONE HERBERT SCREW

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Introduction: Nonunion of scaphoid fractures usually result of delayed diagnosis and management, inadequate immobilization, or more than 1 mm of initial fragment displacement. The pathologic movement at the nonunion site gradually leads to bone resorption and cystic changes, resulting in a considerable bone defect after intraoperative curettage of fibrocartilagenous tissue down to bleeding surfaces, requiring full-width bone interposition. Both conventional and vascularised bone graft have been used for management of scaphoid nonunion. Principle of our technique is to improve union rate by addressing the issue of bone gap by using cancellous bone graft from ipsilateral distal radius with compression at fracture through internal fixation with Herbert screw & by improving biology using pronator quadratus pedicle bone graft. Method: Between 2009 to 2011, 8 cases of nonunion scaphoid were treated through volar approach with ipsilateral distal radius cancellous bone graft and pronator quadratus pedicle bone graft with Herbert screw fixation. The mean duration of non-union was 8 (range 6–12) months. The mean range of motion was 100° (70° less than the normal hand). The most affected movements were radial deviation. Result: The mean follow-up duration was 30 months; all 8 patients achieved union at 12 (range 10-16) weeks with good function of wrist (mean range of motion increase from 100° to 160°, grip strength increase by 25 %). Conclusion: Treatment of scaphoid nonunion with pronator quadratus pedicle bone graft and ipsilateral distal radial cancellous bone graft with Herbert screw fixation gives excellent results and provides better clinical outcome.

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Abstract no.: 32253

EARLY EXPERIENCE WITH SINGLE TENDON TRANSFER OF FLEXOR CARPI ULNARIS TO DIGITAL EXTENSORS IN HIGH RADIAL NERVE PALSY

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A triple transfer for the wrist, fingers and thumb extensors is currently the most accepted in high radial nerve paralysis. We describe our experience with a single tendon transfer of flexor carpi ulnaris for such lesions. Patients & Methods: Seven patients with high radial palsy as well as one with brachial plexus injury were taken up for a single tendon transfer of FCU to EDC, EIP and EPL. A splint was used for 4 weeks postoperatively, followed by intensive physiotherapy. Patients were followed up monthly in terms of improvement in grip strength (both power and precision) and range of motion at the wrist, metacarpophalangeal joints and range of thumb abduction. The data was analysed using Student's t-test, with a p value of <0.05 considered statistically significant. Results: There was a mean increase of 258% in power grip($p<0.001$), 46% in tip pinch($p=0.0014$), 32% in key pinch($p=0.016$) and 69% in palmar pinch($p<0.001$). Postoperative mean range of wrist dorsiflexion was 22° with a fist and 6° with fingers extended. Mean extension lag at the metacarpophalangeal joints was 2° and 7°, with the wrist in neutral and dorsiflexion respectively. Mean thumb abduction was 27° while wrist flexion was 46°. Conclusion: A single tendon transfer of the FCU to the digital extensors is effective in improving grip strength in high paralysis of the radial nerve, thereby allowing good functional rehabilitation with the advantages of simplicity, lesser operating time and minimal surgical scarring.

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Room: Rashid B

Abstract no.: 32644

AN EXTRA-ARTICULAR ALTERNATIVE TO TREAT ISOLATED LUNOTRIQUETRAL LIGAMENT INJURIES

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Isolated injuries to the lunotriquetral interosseous ligament (LTL) are relatively uncommon injuries of the carpus, which may be treated by surgical repair, reconstruction, capsulodesis or ulnar shortening osteotomy (USO). USO carries the benefit of not violating the wrist joint, instead reducing lunotriquetral motion by tightening the accessory ligaments. This study includes 62 cases of arthroscopically verified isolated LTL tears (Geissler type II to IV) treated with a USO technique between October 1992 and April 2010 with minimum one year follow-up (range, 1 to 10.6 y). Surgical outcomes were assessed using pre- and post-operative measurements of grip strength and active range of motion (AROM) as well as objective and subjective data graded using Chun and Palmer's modified Gartland and Werley wrist grading system. Preoperatively, all cases were graded fair (29.0%, n=18) or poor (56.5%, n=35). At final follow-up, the majority of patients exhibited excellent (48.4%, n=30) or good (30.6%, n = 19) scores, some fair (16.1%, n=10) and no poor scores. Mean grip strength increased from a value of 22.4 kg before surgery to 31.8 kg at final follow-up, a 9.4 kg (41.8%) increase. The mean bone healing time was 18.6 weeks (range, 8 to 37 weeks) post osteotomy. There were no non-unions, infections, or other complications. Osteotomy plates were removed in most cases (87.0%, n=54) at a mean of 16.9 months, upon persistent tenderness in the plate area that was unresponsive to conservative management. These results suggest that isolated LTL tears can be successfully treated by USO.

Date: 2012-11-29
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Abstract no.: 32913

NERVE RECONSTRUCTION FOR GLOBAL BRACHIAL PLEXUS PALSIES

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Brachial plexus injuries affecting all five roots disconnect the upper limb from the brain. Nerve grafting from available root stumps in the neck and nerve transfers offer the only means of reestablishing communication. This is a report on 150 cases of post-traumatic total palsies operated upon since 1995 with a follow-up of at least two years. Nerve transfers from the spinal accessory and the intercostal nerves have restored shoulder abduction and elbow flexion consistently in more than 75% cases. Restoration of hand function requires nerve grafting from root stumps. The contralateral C7 transfer is a useful alternative if all the roots are avulsed. However, the function is limited to weak flexion at the wrist and fingers. It takes 18-24 months to appear and is rarely useful to the patient. This was seen in half the patients younger than 20 years while none of the patients older than 32 years recovered any distal function. Nerve surgery offers the possibility of reanimation of the paralysed upper limb but further orthopaedic operations such as derotation osteotomy of the humerus or shoulder fusion are necessary to improve shoulder control. In addition, the wrist and distal radioulnar joints are fused for better cosmesis. Thus, current nerve transfer and nerve grafting techniques offer us the possibility to restore primitive functions and improve the quality of life in these devastating injuries.

Date: 2012-11-29
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Abstract no.: 32386

**ULNA SHORTENING USING THE OBLIQUE INTRA-ARTICULAR
OSTEOTOMY (COMTET-SENNWALD OSTEOTOMY) A REVIEW OF 54
PATIENTS WITH A 1 YEAR FOLLOW UP**

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(FRANCE)

Following a presentation at the congress of the French Hand Surgery Society in 2008, the oblique intra-articular osteotomy method designed by J.J. Comtet and G. Sennwald has been officially affirmed in resolving the ulnar impaction syndrome. We are reporting upon 54 cases which include a follow up after one year. The mean follow-up is 13,7 months. Pain decreased from 2.97 to 0.26 on a scale of 4. Range of motion in flexion and extension has been improved by a few degrees. Prono-supination increased from 20-153° to 20-175°. This functional result has been obtained in a average of 5 weeks, with self mobilisation in 60% of the cases. The early immobilisation used a splint for 3 weeks only. Bone healing has been obtained in a mean of 5,3 weeks. The Quick Dash was 35.14 at follow up. Pain in particular was improved. The rapidity in which the results were obtained is in and of itself a major argument in the effectiveness of this method. This technique has greatly simplified the ulnar shortening with rapid postoperative results. This method is recommended for ulnar shortenings less than 4mm.

Date: 2012-11-29
Session: Hand: Trauma
Time: 17:00 - 18:30
Room: Rashid B

Abstract no.: 32544

DISTAL RADIAL FRACTURES. NON BRIDGING EXTERNAL FIXATION VS BRIDGING EXTERNAL FIXATION.

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Surgical management gold standard of unstable distal radial fractures is controversial. We compared the functional outcomes of treatment of unstable distal radial fractures using a non bridging external fixation and a bridging external fixation. In this study we reviewed 48 unstable distal radial fracture treated between January 2009 and December 2010 with a non bridging external fixation (twenty-four patients) or a bridging external fixator (twenty-four patients). The patients completed the DASH and PRWE questionnaire at 1,3,6 month and 1 year after surgery. The ranges of motion of the wrist and forearm, and radiographic parameters were also evaluated. At 1 and 3 months, the mean PRWE and DASH scores for the patients with a non bridging ex.fix. were significantly better. At six months and one year both groups had DASH and PRWE scores comparable with those for the normal population. The wrist range of motion differed significantly among the two groups at 1,3 and 6 months after surgery being better for the non bridging group. There were no significantly differences in radial inclination and radial length maintenance at one year. No major complications were detected in both groups. Use of a non bridging external fixator on our opinion leads to better patient-reported outcomes (DASH and PRWE scores) in the first three months after fixation. However, at six months and one year, the outcomes of the two techniques were found to be excellent, with the only differences among them in terms of motion.

Date: 2012-11-29
Session: Hand: Trauma
Time: 17:00 - 18:30
Room: Rashid B

Abstract no.: 32281

RADIOLOGICAL AND FUNCTIONAL OUTCOMES OF OPEN REDUCTION AND VOLAR LOCKED PLATES VERSUS EXTERNAL FIXATION

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Introduction: The aim of this study is to compare the radiological and functional outcomes of open reduction and volar locked plates versus external fixation in the treatment of the unstable intra articular distal radius fractures. Materials and Methods: In this retrospective comparative study 69 of 80 patients who were operated for AO/ASIF C1, C2 and C3 distal radius fractures were assessed. The functional evaluation was made with Gartland-Werley scoring system and PRWE scale, also the wrist range of motion and grip strength were measured. For radiological assessment radial inclination, volar tilt, radial length, ulnar variance and articular step-off were compared. Results: The range of movement, for all parameters, was better in volar plate group but only wrist flexion and pronation degrees were significantly different ($p=0.037$, $p=0.014$). Beside better subjective functional results in the volar plate group, difference was not significant. According to radiological evaluation all parameters were better in the volar plate group but only radial inclination and articular step-off were significantly different ($p=0.018$, $p=0.029$). Conclusion: Volar locked plate is dependable method in the treatment of intra-articular distal radius treatment with lower complication rates. On the other hand, for these fractures, external fixation looks a suitable surgical alternative with easy application and acceptable results. Key words: Volar locked plate, external fixation, distal radius fractures, intra articular, wrist injuries.

Date: 2012-11-29
Session: Hand: Trauma
Time: 17:00 - 18:30
Room: Rashid B

Abstract no.: 30800

VOLAR LOCKING PLATE VERSUS K-WIRING FIXATION OF DISTAL RADIUS FRACTURES IN 20-65 YEAR OLDS

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Introduction: Fractures of the distal radius are one of the most common injuries encountered in orthopaedics. Optimal management remains controversial. Radiographic reconstruction does not correlate with functional outcome in the elderly but remains unclear regarding younger higher demand patients. This study aims to compare outcomes of treatment with volar locking plate versus MUA & K-wire fixation in the 20-65 year population. Methods: A retrospective comparative study of 321 distal radius fractures over a 4 year period was conducted. 151 patients were treated with volar plating and 170 with MUA & k-wire fixation. Radiographic parameters: radial inclination, radial length, volar tilt, ulnar variance and osteoarthritic changes were compared. Functional outcome was assessed using the Disabilities of the arm, shoulder and hand (DASH) score and patient rated wrist evaluation (PRWE) score. Results: Mean age 46.6 years; mean follow up 31.3 months. OTA classification system showed 160 type A, 118 type B and 43 type C fractures. Mean age, sex and fracture pattern were matched between groups. Radiological reconstruction was significantly better in the volar plate group: radial inclination 22.1° v 21.3° ($p=0.09$), volar tilt 4.2° v 1.7° ($p=0.07$), ulnar variance -0.5mm v 0.1mm ($p=0.03$), radial length 10.9mm v 10.4mm ($p=0.01$). 4% (6/151) of the volar plate group were radiologically unacceptable versus 13% (22/170) in the k-wire group ($p=0.03$). Mean DASH/PRWE scores showed no difference between the two groups: DASH 12.8 v 12 ; PRWE pain 12 v 8.8 ; PRWE function 9.9 v 10.6 ; PRWE total 21.9 v 19.4 . Conclusion: Volar plating results in superior reconstruction versus k-wires. This does not translate to better functional outcomes or less pain at 2.5 years follow up.

Date: 2012-11-29
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Time: 17:00 - 18:30
Room: Rashid B

Abstract no.: 33197

RESULTS OF AO TYPE-C DISTAL RADIUS FRACTURES TREATED WITH VOLAR LOCKING PLATE

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INTRODUCTION: Treatment of displaced/unstable intra-articular distal radius fractures is challenging. We conducted this prospective study to assess the clinical and functional outcomes of displaced intra-articular AO type C fractures treated with a volar locking plate. **METHODS:** Between April 2009 to August 2011, 33 patients treated with a volar locking plate were recruited. Patients were divided into 2 groups (<50 year old and >50 year old). In the younger subset, there were 11 patients with a mean age of 38.4 (24 to 49). In the older subset, there were 22 patients with a mean age of 64.4 (51 to 87). Mean follow up was 523 days (262 to 857 days). All patients underwent volar locking plate fixation through standard Henry approach. Clinical, radiological and functional assessments were carried out. Quick DASH score and Mayo wrist score were used. For the radiological parameters, we measured the radial height, radial tilt, ulnar variance, radial inclination, gap and step off using the pre and post surgery radiographs. **RESULTS:** All the fractures united in 10-16 weeks. There was improvement in radiological parameters ($p < 0.05$) in both patient groups. The functional outcome was better in the younger patient group ($p < 0.05$). Complications included one case of infection and a case of regional sympathetic dystrophy (RSD). There was no failure of fixation. **CONCLUSION:** AO Type C fractures are severe injuries and our results show that volar locking plates can be used as an effective modality for treating these challenging fractures with good clinical and radiological outcomes.

Date: 2012-11-29
Session: Hand: Trauma
Time: 17:00 - 18:30
Room: Rashid B

Abstract no.: 31943

COMPARISON OF POLYAXIAL AND UNIAXIAL LOCKING SYSTEMS FOR THE TREATMENT OF DISTAL RADIUS FRACTURES

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Introduction: Polyaxial locking screws have been introduced to allow surgeons to dictate the screw angle whilst retaining the locking fixed angle attribute of the construct. This feature has the benefit of using longer subchondral screws to better support the dorsal cortical fragments. Our aim was to compare this parameter in a polyaxial locking plate system with the fixed angled uniaxial system. Methods: Retrospective review of 40 consecutive distal radius fractures treated with open reduction and internal fixation by volar locking plate over a period of 8 months at one institute. Twenty were treated with the Synthes Variable angle distal locking plate system (polyaxial screws) and twenty with the Depuy DVR volar plating system (uniaxial screws). On the lateral post-operative x-ray we measured the length of subchondral bone unsupported by metal (A) in relation to the width of the distal radial metaphysis (B). Statistical comparison was made using the paired student t-test. Results: The DVR group had 11 males and 9 females, mean age was 52.4 ± 18.52 . The Synthes group had 8 males and 12 females, mean age was 50.6 ± 17.7 . The mean percentage of unsupported subchondral bone (A/B) was 13% for the Variable angle system while that for the DVR uniaxial system was 27%. This was statistically significant ($p < 0.001$). Conclusion: Our results suggest that the polyaxial angle-stable system allows the surgeon to insert screws that support more of the subchondral bone to better buttress the fracture fragments. These subtle advantages may prove to afford better fracture stability especially for comminuted articular fractures.

Date: 2012-11-29
Session: Hand: Trauma
Time: 17:00 - 18:30
Room: Rashid B

Abstract no.: 32630

ARE VOLAR PLATES THE ONLY OPTION FOR COMPLEX INTRA-ARTICULAR DISTAL RADIUS FRACTURES?

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Volar locking plates, while effective for treatment of unstable distal radius fractures (DRFs), are associated with some incidence of tendon irritation and neuropathic complications. Non-bridging external fixators provide a minimally-invasive alternative to volar locking plates, although some doubts remain regarding their use in comminuted, intra-articular DRFs. This study includes 23 cases of complex, intra-articular distal radius fractures (AO type C) treated with closed reduction, percutaneous fixation with multi-planar K-wires attached to a non-bridging external fixator (CPX system). Standard radiographs were obtained pre-op, post-op, at 8-12 weeks and 10-14 months. Postoperatively, formal wrist rehabilitation began at mean of 8 days (range 2-16). Radiographic variables were measured at each time point using digitized radiographs. Patients were also evaluated for grip strength, pinch strength and active wrist range of motion (AROM), Patient-Rated Wrist Hand Evaluation (PRWHE) and the Disabilities of the Arm, Shoulder and Hand (DASH). At average follow-up of 17 months (range 12-36) patients demonstrated excellent radiographic, functional and subjective outcomes (Final DASH of 10.8). There was no significant change in radiographic parameters following reduction, ($P>0.33$) although parameters were slightly outside of accepted ranges in three patients, including two cases of increased ulnar variance. There were no pin track infections, non-unions or tendon injuries. One patient developed complex regional pain syndrome which resolved and one patient had mild transient superficial radial nerve sensitivity without functional compromise. All returned to their prior employment and/or activities. These results suggest that the CPX System may be indicated for complex intra-articular DRFs when closed reduction is possible.

Date: 2012-11-29
Session: Hand: Trauma
Time: 17:00 - 18:30
Room: Rashid B

Abstract no.: 32529

MORPHOLOGIC STUDY OF WRIST AND ITS IMPACTION ON FRACTURE PREVALENCE AND TREATEMENT.

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Abstract: We studied the ulnar variance in a group of wrist fractures in lebanese population and whether morphologic aspect has an impact on the prevalence of the distal radius fracture, and how much intrafocal pinning is effective in treatment of this fracture in order to restore initial morphology. Materials: 65 cases of distal radius fractures, between 15 and 85 years old were operated with three intrafocal pinning (Kapandji's Procedure). All patients have benefited of a controlateral X-ray to compare the radio-ulnar variance after reduction with the opposite side values. Results: The radio-ulnar variance at non operated side was: Neutral in 44 cases (66%), positive in 16 cases (25%) and negative in 5 cases (9%). The radio-ulnar value postoperatively was neutral in 40 cases (62%), positive in 18 cases (28%) and negative in 7 cases (10%). Postoperatively: 37 from 44 neutrals values stay neutral or lengthened radius post-op and 7 shortened, 11 from 16 positive values stay positive and 5 lengthened radius, and 3 from 5 remained negative and 2 shortened radius. Discussion: These results compared to the distribution of the radio-ulnar aspect in normal population demonstrated more percentage of fractures in neutral variance (66%) vs (42%) in normal population, less fractures in positive values (25%) vs (48%) and same incidence in negative values (9%) vs (10%). The intrafocal pinning allowed lengthening of radius and restoration of the radio-ulnar variance in 86% and in 14 % this technique didn't demonstrate restoration of the initial morphology. This later was obtained more often in the neutral and negative groups.

Date: 2012-11-29
Session: Hand: Trauma
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Room: Rashid B

Abstract no.: 32350

CORRECTION OF VOLAR MALUNITED EXTRA-ARTICULAR DISTAL RADIAL FRACTURES USING VOLAR LOCKED PLATES WITHOUT BONE GRAFTING

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Malunion is the most common complication of the distal radius with many modalities of treatment available for such a problem. The use of bone grafting after an osteotomy is still recommended by most authors. We hypothesized that there is not a need for bone grafting; fixing the corrected construct with a volar locked plate helps maintain the alignment, while the metaphyseal defect fills by itself. Prospectively, we performed the procedure on 24 malunited volarly angulated radii using fixed angle volar locked plates without bone grafting. At the final follow up, radiographic evidence of union, correction of the deformity, clinical and functional improvement was achieved in all cases. Without the use of bone grafting, corrective open wedge osteotomy fixed by a volar locked plate provides a high rate of union and satisfactory functional outcomes.

Date: 2012-11-29
Session: Hand: Trauma
Time: 17:00 - 18:30
Room: Rashid B

Abstract no.: 31214

OUTCOME ANALYSIS OF FRACTURE LOWER END RADIUS (AO TYPE B & C) TREATED BY PLATE FIXATION

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Introduction: Fractures of the distal end of the radius should be treated on the same principles as other fractures involving joints. Displaced articular fractures require open reduction and plating which allow anatomical reconstruction of both the radiocarpal and the radio-ulnar joints, stable internal fixation, decreased period of immobilization and early return of wrist function. Material & Methods: Twenty-eight patients with an unstable distal radial fracture (AO type B & C) treated with open reduction and volar plate fixation were enrolled in a prospective study conducted at the department of orthopaedics, GMC Bhopal. Results: Excellent results were obtained in 17 of the 28 patients; results were good in 6, fair in 3 patients and poor in 2 patients according to The Gartland and Werley score. One patient developed postoperatively carpal tunnel syndrome which was treated conservatively and patient recovered from symptoms at 6wks follow-up. One patient develops infection at 5th day postoperatively later same patient develops stiffness having poor outcome. There were no tendon irritation or rupture, nonunion, implant failure, or nerve palsy. Conclusion: Our results in the first small group of 28 patients have been encouraging. The operation is technically demanding but provides an excellent method of treatment for difficult distal fractures of the radius. Better functional results can be expected in the early postoperative period in association with open reduction and internal fixation, and this form of treatment should be considered for patients requiring a faster return to function after the injury.

Date: 2012-11-29
Session: Hand: Trauma
Time: 17:00 - 18:30
Room: Rashid B

Abstract no.: 32132

FUNCTIONAL AND RADIOLOGICAL OUTCOME OF DISTAL RADIUS FRACTURES AFTER LOCKING PLATE OSTEOSYNTHESIS.

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Introduction: After the introduction of the locking implants there has been a shift towards the operative treatment of distal radius fractures. The aim of the study was the examination of the long-term clinical and radiological outcome after operative treatment with locking plate osteosynthesis (LCP, Synthes®) Methods: The population consisted of 130 distal radius fractures. Mean age was 58.5 (SD 16.1), mean follow-up 22.7 months (SD 10.7). The fractures were classified according AO (6 A2-, 48 A3-, 1 B1-, 2 B3-, 22 C1-, 27 C2-, 24 C3). All patients were treated operatively with a LCP osteosynthesis (2.4mm or 3.5mm LCP, Synthes®). In most cases a palmar approach was chosen (80.5%). Range of Motion (ROM) and grip strength were evaluated. The Gartland-Werley Score (GWS) and the DASH score were used for the assessment the function. The lateral and anteroposterior angle were radiologically determined. Complications were documented. Results: Mean ROM: flexion 47.2° (SD 15°), extension 53.3° (SD 12.4°), ulnarabduction 33.7° (SD 9.5°), radialabduction 18.4° (SD 6.7°), pronation 86.6° (SD 11.7°) and supination 71.7° (SD 13.1°). The grip strength was 84.2% of the healthy side. The respective mean values of DASH and GWS were 18.9/100 (SD 21.1) and 3.5/37 (SD 4.2). All fractures were anatomically reduced (ap angle: 22.3° (SD 4.2), lateral angle 7.8° (4.4°). Eight complication were recorded, two tendon ruptures among them. The operative treatment with LCP shows very good functional and radiological long-term results. The high rates of tendon ruptures in the literature were not confirmed in our study.

Date: 2012-11-29

Session: Trauma: Tibial Proximal & Distal

Time: 08:30 - 10:00

Room: Rashid C

Abstract no.: 30795

HYBRID EXTERNAL FIXATOR FOR TREATMENT OF COMPLEX TIBIAL PLATEAU FRACTURE

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Comminuted tibial plateau fractures present a surgical challenge to the orthopaedic surgeon. Over the years, treatment has ranged from traction to cast immobilization to open reduction and internal fixation. More recently, indirect reduction techniques with external fixation have been used. At the authors' institution, from 1990 to 1992, 18 Schatzker Types V and VI tibial plateau fractures were treated in 18 patients with indirect reduction and application of a Monticelli-Spinelli hybrid external fixation system. Two patients had additional internal fixation and were excluded from this review. All 16 patients were available for follow-up evaluation. The mean time to union was 4.5 months. There were no non-unions. Three patients developed a varus deformity. Fifteen had radiographic evidence of early degenerative changes at 1 year follow-up. There were 11 superficial pin tract infections in 4 patients; all resolved with local pin care and a short course of oral antibiotics. There were no deep infections. With the added advantages of minimal to no soft tissue stripping and early knee range of motion, this technique is recommended for treatment of these difficult fractures.

Date: 2012-11-29

Session: Trauma: Tibial Proximal & Distal

Time: 08:30 - 10:00

Room: Rashid C

Abstract no.: 32291

MANAGEMENT OF COMPLEX TIBIAL PLAFOND FRACTURES BY DELTA FRAME EXTERNAL FIXATOR

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The treatment of tibial plafond fractures requires careful management of the soft tissue envelope, reconstruction of the articular surface and stable fixation with minimal additional damage. Thirty cases of AO type B2, C 2,C3 tibial fractures were treated by delta frame external fixation The average follow-up was 30.5 months (range 24 to 36 months). Open reduction and internal fixation of the fibula fracture was performed in 20 patients (67%) using a 1/3 tubular plate, mininzal internal fixation with interfragmentary screws was performed in 5 fractures (17 %). All tibial plafond fractures healed average time 4.5 months (range, 2.5-6 months). Using radiological assessment of Crutchfield for assessment of reduction of the articular fragments and the functional ankle scoring there were excellent and good in 25 cases (83.3%). Pin track infection occurred in four patients (13.3 %). Minimal skin necrosis around the wound was observed in two patients (6 %). Malunion in the form of 15" valgus occurred in one fracture (3 %). Two patients (6 %) had shortening of their legs ranging between 1 to 2 cm. Conclusion: This treatment method compares well with previous published series and is to be recommended for this group of difficult fractures.

Date: 2012-11-29

Session: Trauma: Tibial Proximal & Distal

Time: 08:30 - 10:00

Room: Rashid C

Abstract no.: 32660

ROLE OF ILIZAROV IN MANAGEMENT OF COMMUNUTED TIBIAL PLATEAU FRACTURE PROSPECTIVE STUDY

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Background: using Ilizarove in management of comminuted tibial plateau fractures is not a new method but it increasing nowadays. Purpose: To directly evaluate the outcomes of fixation using Ilizarove in comminuted tibial plateau fractures in 33 cases. Study Design: prospective study. Methods: thirty three patients (29 closed fractures ,4 open fractures) were followed up for 4-9 months for Union, follow up time, patient satisfaction, radiographs, and ability to return to pre injury activity levels were evaluated. 20 cases were type V and, 13 cases were type VI tibial plateau fracture. 28 males, 5 females, 25 Lt tibia and 8 rt tibia and the age of patients ranging from 28 to 57 years old. Results: All the fractures united at a mean of 26 weeks (4 – 9 months) with success rate (100%). All patients returned to work except one case. According to Lysholm score 2 cases were excellent 2 cases were poor and the remaining were good results. One case (3.03%) had infected skin and subcutaneous tissues and needed debridement. One case developed skin problem and needed skin graft, one case developed compartment and needed fasciotomy. 5 patients show unhappiness with the device in the last one month. Conclusion: we recommend using of Ilizarov ext. fixation for stabilization of closed or open comminuted tibial plateau fractures .

Date: 2012-11-29

Session: Trauma: Tibial Proximal & Distal

Time: 08:30 - 10:00

Room: Rashid C

Abstract no.: 31659

A PROSPECTIVE RANDOMIZED TRIAL COMPARING ORIF WITH LESS INVASIVE OSTEOSYNTHESIS FOR LATERAL TIBIAL PLATEAU FRACTURES

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The aim of the present randomized clinical study was to compare the outcomes of two methods that were used for the treatment of lateral tibial plateau fractures: (A) ORIF and (B) less invasive percutaneous technique. Forty-six patients with a displaced lateral condyle tibial plateau fracture were randomized to ORIF with a buttress plate (n = 25) or percutaneous cancellous screw fixation. (n = 21). All patients in both Groups had a bone grafting from the ipsilateral iliac crest. The bone grafting was performed through the "opened" condylar fragment (Group A) or through a cortical window in the proximal tibial metaphysis on the medial site after reduction (Group B). All patients had an anatomical reduction of the articular surface and the same postoperative management. The outcome was measured on the basis of the Lysholm-like score. Electromyography, triplex ultrasonography and rheography have been used to evaluate the functional condition of the neuromuscular system and regional blood circulation. The radiographs and CT scans were performed after and postoperatively. Patients in the Group B had higher Lysholm score, indicating better knee function, in the all postoperative time period ($p < 0.05$). The parameters of neuro-muscular activity and regional blood circulation have normalized more intensively from 3th to 6th month after less invasive surgery ($p < 0.05$). The number of complications was higher in the operative treatment group (five compared with two, $p > 0.05$). The twelve-month follow-up examination indicates that less invasive percutaneous osteosynthesis of lateral tibial plateau fractures provided better clinical results.

Date: 2012-11-29

Session: Trauma: Tibial Proximal & Distal

Time: 08:30 - 10:00

Room: Rashid C

Abstract no.: 31082

MANAGEMENT OF DISPLACED HIGH ENERGY TIBIAL PLATEAU FRACTURES USING MINIMAL INTERNAL FIXATION, AND AUGMENTED BY AN ILIZAROV FRAME.

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Aim: the aim of this study was to evaluate the clinical and radiographic follow-up results of management of displaced tibial plateau fractures using minimal internal fixation and supplemented by and Ilizarov frame. **Patients & methods:** between 2005 and 2012, there were 19 patients with displaced tibial plateau fractures. Closed reduction was attempted at first in all cases using ligamentotaxis and reduction clamps under C-arm guidance. If this was successful, minimal fixation by a cannulated screws was performed and then application of a long (above the knee, hinged) Ilizarof frame was performed. If the reduction was inadequate, open reduction using minimal incisions was performed and the same treatment took place. A minimal follow-up of 12 months was a must for this study. **Patients included** in this study had unfavorable conditions for internal fixation (skin bullae, abrasions, open wounds, and co-morbidity). Grafting was never performed in this study. **Results:** all the patients were allowed for partial weight bearing within 2 days after surgery. The clinical end results at the final follow up period were favorable in more than 90% of the cases and only unfavorable results took place in less than 10% of the cases. **Discussion & Conclusion:** minimal internal fixation and application of the Ilizarof frame is a useful tool for management of complex tibial plateau fractures (bicondylar and fractures with metaphyseal extension).

Date: 2012-11-29

Session: Trauma: Tibial Proximal & Distal

Time: 08:30 - 10:00

Room: Rashid C

Abstract no.: 31131

PERCUTANEOUS METHOD OF TREATMENT OF AVULSED TIBIAL EMINENCE FRACTURES. (ACL- AVULSION FRACTURE)

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Background: Avulsed tibial eminence fractures are commonly treated by open technique, however surgical morbidity especially soft tissue dissection, profound stiffness, surgical & technical difficulty in fixation of small fragments and non-availability of proper trajectory for screw insertion makes the procedure difficult. For this reasons we have evolved a percutaneous method of fixation. Methods: We performed a unicentric retrospective clinical study in which avulsed tibial eminence fractures were subjected to percutaneous fixation. 96 fractures in 94 patients were operated under image intensifier. Follow up consisted of obtaining a history, physical examination, radiographs and physiotherapy. Results: Out of 96 knees in 94 patients bony union was achieved in all the cases. There was no evidence of superficial or deep infection in any of these cases. Conclusion: Percutaneous technique of fixation of tibial eminence fracture provides a satisfactory quality of fracture reduction & fixation and is easy technique under c-arm guidance. It results in decreased stiffness. This is quite useful technique in patients having associated femoral and tibial shaft fracture or condyle fracture. This technique is helpful in children with open epiphyses. Implant retrieval is easy.

Date: 2012-11-29

Session: Trauma: Tibial Proximal & Distal

Time: 08:30 - 10:00

Room: Rashid C

Abstract no.: 31128

TYPES OF DEPRESSION & MODES OF ELEVATION TIBIAL CONDYLAR FRACTURES

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Introduction : Types of depression of tibial articular surface in various tibial condylar fractures is varied. Present study describes in detail about various types and forms of depression with a methodology and the best mode of elevation and holding for depressed fragment . Method : 250 tibial condyl fractures which were operated at our centre were studied for various types of depressed fragment configurations and as the experience was gained in elevating this fragments various modes of elevations and retaining of articular fragments and positions were standardized for e.g. Direct punch elevation, Angled punch elevation, K-Wire directed elevation, Elevation with punch and grasping with tongs, Bottom graft elevation , etc....We have described various types of depression patterns as Pit Depression Roof Collapse Type, Punch Depression, Free Floating Depression, Tilted Wall Depression, Multiple Fragment Depression. Results : Analysis of patterns of depression has resulted into better articular congruence and better construct of implant also it has helped in rationalizing either medial or lateral approach for buttressing the tibial condylar fractures. Conclusion : Study of various types of depression of articular fragment and their categorization is clinically useful in proper planning and understanding of the tibial condyl fractures, saving precious OT time, reducing stress in OT for management of these difficult fractures ultimately resulting into better surgical outcomes.

Date: 2012-11-29

Session: Trauma: Tibial Proximal & Distal

Time: 08:30 - 10:00

Room: Rashid C

Abstract no.: 32378

FUNCTIONAL OUTCOME OF INTERNAL FIXATION OF HIGH ENERGY PROXIMAL TIBIAL FRACTURES (SCHATZKER TYPE V &VI) TREATED WITH PROXIMAL TIBIAL LOCKING COMPRESSION PLATE

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Introduction: The treatment of displaced tibial plateau fractures is challenging. The optimal treatment modality has been a source of controversy for a long time. For the more severe type of injuries resulting in comminuted tibial plateau fractures the ideal modality of treatment is debatable. This study is to evaluate the rate of union and functional outcome of patients with high energy proximal tibial fractures, who underwent open reduction and internal fixation with locking compression plate. Materials and methods: Patients with high energy proximal tibia fractures (Schatzker Type V &VI) treated at our institute were included in the study. They were 32 patients between the physiological age of 20 to 85 years, which included 25 males and 7 females. 7 out of 32 were open fractures & 25 were closed. All were treated by open reduction and internal fixation with proximal tibial locking compression plate using Synthes 4.5 system. Results: During follow up X rays and IOWA scoring system was employed to assess the outcome with respect to union, pain, function, gait, and absence of deformity and range of movement. Accordingly 14 patients had excellent result, 10 good, and 7 fair results. Conclusion: A good functional outcome can be achieved in displaced proximal tibial fractures using newer biological implants, which helps in achieving good reduction and avoid secondary loss of reduction. This has improved outcomes, lowered the rates of revision and lessened the occurrence of deep soft-tissue infections. However, mal-union, knee stiffness, and deep infections remain concerns.

Date: 2012-11-29

Session: Trauma: Tibial Proximal & Distal

Time: 08:30 - 10:00

Room: Rashid C

Abstract no.: 31325

MANAGEMENT OF SEGMENTAL TIBIAL BONE DEFECT BY FREE VASCULARIZED OSTEOSEPTOCUTANEOUS FIBULAR GRAFT

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Introduction: the free vascularized fibular graft has been successfully applied as a reconstruction option in patients with traumatic, septic skeletal defect, or after tumor resection. Skeletal defects can be classified as primary or secondary. so this study evaluates free-fibular vascularized osteoseptocutaneous flap transfer for tibial shaft fractures with segmental bone loss (more than 6cm), with deferent methods of fixation. Patients and method: twenty patients with traumatic tibial defect were 17 male and 3 were female, and their mean age was 20 years (range 4 – 45 years). these patients have soft tissue loss, and all of these fractures were the result of road traffic accidents, train accident and gunshot. Results: after excluding one case of failure anastomosis, 6 cases of stress fractures, all cases had bone union 4.2 m(range 3:9) and significant hypertrophy, and the patients had been evaluated for functional results according the simplified scheme proposed by Georgiadis et al. Conclusion : vascularized fibular transfer is a reliable technique for reconstruction of bone defect of the tibia and is associated with satisfactory functional outcome.

Date: 2012-11-29

Session: Trauma: Tibial Proximal & Distal

Time: 08:30 - 10:00

Room: Rashid C

Abstract no.: 31886

LOCKING PLATE FIXATION FOR COMPLEX PERI-ARTICULAR FRACTURES OF THE TIBIA.

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The purpose of this study is to present the experience of our institution with the use of the locking plate using a minimally invasive technique for the management of complex peri-articular tibial fractures. Patients' records and radiographs were retrospectively between 2002 and 2011. Patient demographics, procedure, timing to theatre, complications and final outcome were recorded. Over a period of 10 years, 73 patients (age 16 – 88) with complex peri-articular tibial fractures were managed in our institution. 34 fractures involved the proximal tibia and 35 the distal tibia. The applied locking plates were the AxSOS Plate (Stryker, New Jersey), and the LCP or LISS systems (Synthes, Pennsylvania). 10 patients presented with a compound fracture and 19 (26%) were initially managed with a temporary external fixation. Time from injury to fixation ranged from 0 to 21 days (mean 6.5 days). 11 patients (15%) had infective complications; 7 superficial and 4 deep. All the deep infections had an initial external fixator applied, and received the locking plate after 10 days of the injury. 4 patients had an established non-union and one a delayed union. The rest of the patients achieved normal union. There were 2 plate fractures and 1 lift off. 3 plates were removed before healing for infection and 8 following healing. Locking plate fixation of tibia fractures is technically demanding and achieves good results. Factors shown to predispose to infective complications are timing of surgery, high energy injuries and soft tissue status. Lower complication rates are also noted over time.

Date: 2012-11-29

Session: Trauma: Tibia Nail & Lockin Plate

Time: 10:30 - 12:00

Room: Rashid C

Abstract no.: 30848

A PROSPECTIVE COMPARITIVE STUDY OF REAMED VS UNREAMED INTERLOCKING NAILING IN FRACTURE SHAFT OF TIBIA

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BACKGROUND: Tibia being one of the most commonly fractured long bones in the body, there still remains compelling biological rationale for both reamed and unreamed nailing in the management of tibial shaft fractures. We compared reamed and unreamed interlocking nailing with regard to technique, outcome, time taken for radiological and clinical union and complications encountered in treatment of patients with tibial shaft fractures.**PATIENTS AND METHODS:** We conducted a single centre, prospective randomized trial of 38 adults in whom a tibial shaft fracture was treated with either reamed or unreamed nailing between May 2009 and May 2011. Paediatric fractures and fractures with neurovascular injuries were excluded from the study.**RESULTS:** All 38 patients completed one year of follow up. Of these 20 patients were randomized to reamed nailing and 18 were randomized to unreamed nailing. The overall fracture healing time in the reamed group was 23 weeks and in the unreamed group was 25 weeks. Differences in rate of clinical union, clinical outcome, time for weight bearing and complications in both the groups were insignificant.**CONCLUSION:** There are no clear indications or contra indications to choose between reamed and unreamed nailing for fractures shaft of tibia. The overall outcome in reamed interlocking nailing is 80 % whereas in unreamed interlocking nailing is 72.22 %. Technique, fracture union, functional outcome and complications are almost similar in both the groups. However, considering the ease of technique and the decrease in operative time, unreamed interlocking nailing is found to have an edge over reamed interlocking nailing.

Date: 2012-11-29

Session: Trauma: Tibia Nail & Lockin Plate

Time: 10:30 - 12:00

Room: Rashid C

Abstract no.: 32530

COMPARISON OF FUNCTIONAL OUTCOME BETWEEN HOLLOW NAIL AND SOLID NAIL (SIGN®) IN THE MANAGEMENT OF TIBIAL SHAFT FRACTURE-A TERTIARY CARE EXPERIENCE

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Background: Intramedullary interlocking nailing has been the well-established, preferred method for fixation of tibial fracture in adults. Numerous studies were available for hollow nail but limited for solid nail (SIGN®) which did not need C-arm, and moreover, none of them were controlled trials. Hence, we conducted this prospective randomized controlled trial. Materials and Method: 128 patients with traumatic fracture tibia presenting between June 2008 and May 2009 were enrolled. Patients presenting with multiple injuries, compound fracture (Grade II & III), having deformed medullary canal and not giving consent were excluded. 120 eligible patients were randomly allocated into hollow nail and solid (SIGN®) nail group and treated accordingly using standard technique. Results: Road traffic accident (RTA) was the commonest cause of fracture tibia. After 2 years of follow-up we found no difference in union time, malunion rate and hospital stay. 2 cases in solid (SIGN®) nail group and 4 in hollow nail group needed open reduction. Duration of surgery and blood loss were more in hollow nailing but statistically not significant ($p > 0.01$). There was increased incidence of implant breakage and infection in solid nailing. According to Johner and Wruh criteria, result was excellent in 34(56.67%), good in 19(31.66%), fair in 6(10%) and poor in 1(1.66%) for hollow nail whereas it was 36(60%), 15(25%), 7(11.67%) and 2(3.33%) respectively for solid nail. Conclusion: Our findings support the use of solid nail (SIGN®) for fracture tibia as it can be reduced by closed method with less blood loss, shorter duration and without any radiation exposure.

Date: 2012-11-29

Session: Trauma: Tibia Nail & Lockin Plate

Time: 10:30 - 12:00

Room: Rashid C

Abstract no.: 32257

METAPHYSIAL FRACTURES OF DISTAL TIBIA –CLOSED INTRAMEDULLARY NAILING AS TREATMENT OPTION.

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INTRODUCTION: malalignment of the distal tibial fragment is the main worry for treatment of metaphysical distal tibial fracture by intramedullary nailing which occurs mainly due to the roomy cavity distally. The aim of this study was to evaluate the outcome of closed nailing of such cases and the degree of malalignment. **METHOD:** A total of 34 patients were studied retrospectively. 24 male and 10 female. Age range was from 19 years to 68 years. 28 patients were closed injuries and 6 were open grade I injuries. Average period of study was 26 months. Mean Injury Severity Score of 16.2 (range 9–48). Intramedullary nail with 3 distal locking slots were used with or without poller screws or wires. Average follow-up was 17 months. **RESULT:** the results were studied clinically and radiologically in the form of union time and malalignment on AP and Lateral radiographs. All fractures united. The average time taken for radiological union was 21 weeks (14- 39). Average malalignment on AP view was 3.2 degree and procurvatum recurvatum was 1.3 degree. There was one case of infection that required implant removal. **CONCLUSION:** Although the study is limited by the small sample size and its retrospective design ,we conclude that accurate alignment intraoperatively with use of multiple distal screws with use of poller screws or wires will give satisfactory results in metaphysical fractures of distal tibia .

Date: 2012-11-29

Session: Trauma: Tibia Nail & Lockin Plate

Time: 10:30 - 12:00

Room: Rashid C

Abstract no.: 32268

DYNAMIC OSTEOSYNTHESIS OF DISTAL TIBIAL FRACTURES BY I.M.NAIL

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Aim of the study is to determine the results of closed reduction and dynamic intramedullary (IM) nailing for the distal tibial fractures with additional fixation of fibula with screw intramedullary nail. From May 2007 to May 2011, in 61 patients (19 females and 42 males; mean age, 46.2 years [range, 19-83 years]) of distal tibia were treated with IM nailing. The fractures were classified according to (AO) classification. There were 50 close fracture and 11 grade 1. Fixation was done with reamed snugly fitted intramedullary nail in all cases. Nail was distally locked with two screws and proximally locked with single screw in dynamic mode. Additional poller screws were used in 11 cases. Fibular fracture were fixed with screw intramedullary nail 36. The bone union rate was 97.6% in a mean 15.7 weeks. A leg shortening was found in 4 cases, less than 1 cm. Angulation greater than 5° and less than 10* were observed in 14 cases. In two cases infections of observed. at the screw site. Two cases had bent interlocking screws, BONE grafting were performed in two and exchange nailing was done one case. The mean Olerud functional score at 12 months was 83.5. Concurrent intramedullary nailing for fractures of the distal tibia and fibula is effective in preventing malalignment. The screw intramedullary for the fibula provides additional stability even when a two distal locking bolt is used to fix the intramedullary nail of the tibia.

Date: 2012-11-29

Session: Trauma: Tibia Nail & Lockin Plate

Time: 10:30 - 12:00

Room: Rashid C

Abstract no.: 30736

MINIMALLY INVASIVE OSTEOSYNTHESIS IN DISTAL TIBIAL METAPHYSEAL FRACTURE

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Open reduction and internal fixation in distal tibial fractures jeopardizes fracture fragment vascularity and often results in soft tissue complications. Minimally invasive osteosynthesis, if possible, offers the best possible option as it permits adequate fixation in a biological manner. Seventy nine consecutive adult patients including one patient with bilateral fracture of distal tibia, treated with locking plates (33 fractures-4.5 mm LC-LCP, 27 fractures- metaphyseal LCP and 20 fractures- distal medial tibial LCP), were retrospectively reviewed. Fibula fixation was performed in majority of comminuted fractures (n=41) to maintain the second column of the ankle so as to achieve indirect reduction and to prevent collapse of fracture. There were 2 cases of delayed wound breakdown in fractures fixed with 4.5 mm LC-LCP. Five patients required primary bone grafting and three patients required secondary bone grafting. All the cases of delayed union (n=7) and non union (n=3) were observed in cases where plates were used in bridge mode. Minimally invasive plate osteosynthesis (MIPO) with LCP was observed to be a reliable method of stabilization for these fractures. Complications associated with tibial plating were observed to be significantly reduced on account of use of MIPO technique. Precontoured distal medial tibial LCP was observed to be better tolerated implant in comparison to 4.5 mm LC-LCP or metaphyseal LCP with respect to complications of soft tissues, bone healing and functional outcome, though its contour needs to be rectified.

Date: 2012-11-29

Session: Trauma: Tibia Nail & Lockin Plate

Time: 10:30 - 12:00

Room: Rashid C

Abstract no.: 31631

MINIMALLY INVASIVE PERCUTANEOUS PLATE OSTEOSYNTHESIS IN PROXIMAL AND DISTAL TIBIAL FRACTURES

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Background: We present the results of minimally invasive percutaneous plate osteosynthesis in proximal and distal tibial fractures. Methods: Series of 14 cases at our institute between January 2009 to June 2010 were evaluated. Both intra-articular and extra-articular fractures of tibia were included. we performed minimally invasive percutaneous plate osteosynthesis under image intensifier. Non-weight bearing mobilisation started on second day. clinical and radiological healing was assessed. Guttman scale was used for pain evaluation. Results: Almost all patients had good functional outcome. Of which, 2 patients had superficial infection at screw insertion site and treated with oral antibiotics and one patient developed implant loosening. Conclusion: Minimally invasive percutaneous plate osteosynthesis is the procedure where the plate is inserted by a percutaneous approach hence minimising the soft tissue disruption , periosteal injury ,also preserves the fracture integrity,and vascular integrity of bony fragments. MIPPO combines both principles of the biomechanical properties of fixation and an optimum bone-to-implant contact.

Date: 2012-11-29

Session: Trauma: Tibia Nail & Lockin Plate

Time: 10:30 - 12:00

Room: Rashid C

Abstract no.: 30880

THE RISK OF NERVE INJURY IN MINIMALLY INVASIVE PLATE OSTEOSYNTHESIS (MIPO) WHEN USING A DISTAL TIBIA ANTEROLATERAL PLATE: AN ANATOMIC STUDY.

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Percutaneous plating of the distal tibia via a limited incision is an accepted technique of osteosynthesis for extra-articular and simple intra-articular distal tibia fractures. In this study we identify structures at risk during this approach. Method: Thirteen unpaired adult lower limbs were used for this study. Thirteen, 16-hole LCP anterolateral distal tibial plates were percutaneously inserted according to the manufacturer instructions and confirmed by xray. Dissection was performed around the plate to examine the relation of nerves and soft tissue. Results: The neurovascular bundle was under the plate in one case. Over the horizontal limb of the plate, typically the superficial peroneal nerve had a variable course over all four-screw holes. The anterior tibial artery coursed over hole number 3 and the Extensor hallucis longus tendon was positioned over hole 3 or 4. The Anterior tibialis tendon skirted hole 4 in 12 cases. Over the vertical limb of the plate, the neurovascular bundle coursed over holes, 5 to 7, the superficial peroneal nerve over holes 5 to 7. Discussion: Meticulous attention is required when placing an anterolateral distal tibia plate using a MIPO technique. We recommend a larger initial incision to avoid entanglement of the superficial peroneal nerve under the plate and care over the anterior aspect of the tibia to avoid entrapment of neurovascular bundle and tendons.

Date: 2012-11-29

Session: Trauma: Tibia Nail & Lockin Plate

Time: 10:30 - 12:00

Room: Rashid C

Abstract no.: 32812

OUTCOME FOLLOWING OPEN REDUCTION INTERNAL FIXATION OF DISTAL TIBIAL FRACTURES FRACTURES WITH A MODERN LOCKING PLATE.

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The operative management of 27 patients with distal tibial fractures using a modern locking plate is described. The patients were all treated in a tertiary referral level one-trauma centre. The average age was 38.4 years, with a male:female ratio of 1.7:1. The trauma was high energy in 89% of cases. According to the AO classification, 52% of fractures were classed in the 43-C3 group. There were 8 open fractures, 6 of which required specialist plastic surgical input including free flaps in 4 cases and split-skin grafts in the other 2. These were performed according to published national guidelines for open fractures. All cases were fixed with a "Distal Tibial Locking Plate System" on average 6.5 days after injury. The immediate post-operative reduction quality was assessed with plain radiographs. The joint surface was reduced with a low degree of incongruity on average of 1.3mm. Reduction quality was classed as excellent or good in 96% of cases according to independently published criteria. Patients were followed up for an average 8.3 months (range: 1.6-25.3). At this point 80% of fractures had fused. Three cases had a superficial infection successfully treated with antibiotics. One case required a revision procedure for non-union. The Manchester-Oxford Foot Questionnaire was used to assess outcome. Patients scored 31.2 (maximum 64) at an average of 20.6 months. This study has demonstrated that the Distal Tibial Locking Plate System appears to provide a good fixation option in this challenging fracture pattern.

Date: 2012-11-29

Session: Trauma: Tibia Nail & Lockin Plate

Time: 10:30 - 12:00

Room: Rashid C

Abstract no.: 32642

ROTATIONAL AND AXIAL DEVIATIONS AFTER MINIMALLY INVASIVE PERCUTANEOUS PLATE OSTEOSYNTHESIS (MIPPO) OF TIBIA FRACTURES

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MIPPO is gaining popularity as soft tissue friendly method of fracture stabilization. It allows indirect fracture healing and is especially useful in complex fractures. Nevertheless closed reduction poses special difficulties for control of fragments axial alignment and rotation. The purpose of this study was to evaluate fracture alignment using X-ray and CT-control. Materials and methods: 84 tibia fractures were stabilized using MIPPO during last 5 years. Post-operatively thorough radiological assessment was performed: plain X-rays in all patients and CT in 25 patients. Results: In 61 cases (72.6%) no deviations or deformities not exceeding 5° were seen. Valgus malalignments from 5° to 10° were noticed in 8 cases, in one 12° deformation was seen. Varus malalignments occurred in 10 cases (3 of them exceeding 10°). According to fracture localization in proximal tibia fractures varus malalignments prevailed (8 varus, 3 valgus, 19 normal), in middle-distal tibia fractures 6 valgus and 2 varus deformities were seen (39 normal). In distal intraarticular fractures 2 cases of valgus deformities were seen (7 normal). Rotational malalignments exceeding 10° were noticed in 12 from 25 studied cases (7 internal rotation and 5 external rotation) without relation to fracture location. Conclusions: Essential axial malalignments occurred in 27.4% tibia fractures treated with MIPOO. Varus deformities were more often seen in proximal tibia fractures, while for middle-lower third and distal intraarticular fractures valgus was more specific. Important rotational deformities were noticed in 48% of studied cases what indicates the need of clinical awareness and further investigation in this field.

Date: 2012-11-29
Session: Trauma: Forearm
Time: 14:30 - 16:00
Room: Rashid C

Abstract no.: 30888

COMBINED INTRAMEDULLARY AND EXTRAMEDULLARY FIXATION WITH AUTOGENOUS BONE GRAFTING FOR THE TREATMENT OF FOREARM NONUNIONS WITH EXTENSIVE BONE LOSS

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With current techniques of plate and screw fixation, failure of diaphyseal fractures of the forearm to heal is uncommon. As a consequence, few reports have been published to help guide the treatment of diaphyseal forearm nonunions. Nonunion of a diaphyseal forearm fracture is usually associated with either a complex injury, a complication such as infection, or inadequate internal fixation. As a result, the majority of nonunions are atrophic and result in a defined bone defect. Bridge plates and bone grafts were used successfully for the treatment of such cases, however, the presence of poor bone quality especially with disuse can decrease the screw purchase and stability of fixation. Combined intramedullary and extramedullary fixation may add to the stability of fixation and improve the rates of success. Aim of the work: The aim of this work was to assess the results of treatment of forearm nonunions with extensive bone loss using combined intramedullary and extramedullary fixation with autologous bone grafting. Patients and methods: This study included six patients with forearm nonunions with extensive bone defects treated by combined intramedullary and extramedullary fixation with autologous bone grafting. Informed consent was taken from all patients. Results: All nonunions healed satisfactorily. We had no neurovascular injuries. Conclusions: Combined intramedullary and extramedullary fixation with autogenous bone grafting is a reliable method of treatment of difficult forearm nonunions with significant bone loss.

Date: 2012-11-29
Session: Trauma: Forearm
Time: 14:30 - 16:00
Room: Rashid C

Abstract no.: 32260

SCREW ELASTIC INTRAMEDULLARY NAIL FOR THE MANAGEMENT OF ADULT FOREARM FRACTURES

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The purpose of this paper is to evaluate the results of screw elastic intramedullary nail for the treatment of adult diaphyseal fractures of both forearm bones, which effectively addresses the problems associated with the conventional nailing systems for the forearm fractures. Seventy-six adults with forearm fractures (radius and ulna or isolated fracture of the single bone) were retrospectively evaluated. Fifty males and 26 females with the mean age of 38 years (range, 18-70 years) underwent closed reduction and screw intramedullary nail fixation. Ten patients required limited open reduction. The fractures were classified according to the AO/OTA system. The average follow-up was 12 months (range, 6 to 18 months). The mean surgical time was 45 minutes (35 to 65 minutes). The meantime to union was 14 weeks (10-21 weeks). The results were graded as excellent in 50, good in 18 patients, and acceptable in eight patients, using the criteria of Grace and Eversman. We had superficial infection in three cases, one case of delayed infection, painful bursa in two cases, delayed union in two cases, malunion with dislocation of the DRUJ in two cases. Closed reduction and internal fixation of forearm fractures by screw intramedullary nails re-establishes the near normal relationship of the fractured fragments. Screw intramedullary nail effectively controls both rotatory forces and the migration of the nail. Key words: Fracture radius and ulna, radius fracture, ulna fracture, diaphyseal fracture, screw intramedullary nail

Date: 2012-11-29
Session: Trauma: Forearm
Time: 14:30 - 16:00
Room: Rashid C

Abstract no.: 32216

NERVE TRANSFER TO BICEPS MUSCLE USING A PART OF ULNAR NERVE FOR ELBOW FLEXION RESTORATION IN UPPER BRACHIAL PLEXUS INJURY

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The purpose of this study was to describe and report the result of the ulnar nerve transfer to biceps muscle to restore elbow flexion after acute and delayed upper brachial plexus injuries. Two patients with acute brachial plexus injury and three patients with delayed brachial plexus injury underwent nerve transfer using fascicles of the ulnar nerve to the motor branch of the biceps muscle. The average age of the patients was twenty eight and the follow-up periods were at least six months after the surgery. Patients were evaluated with regard to reinnervation of the biceps, ulnar nerve function, elbow flexion strength, and grip strength. For the two acute patients, the first sign of biceps muscle contraction were observed within week, the average time required for reinnervation of the biceps after nerve fascicle transfer was within six months. For the three delayed patients, the first sign of bicep muscle contraction was observed in about three month, and the average time required for reinnervation of the biceps was ten months. Hypoesthesia of the ulnar nerve was clinically observed in three patients, but this symptom disappeared within month with no treatment. Compared with those delayed cases, the acute patients had faster and better recovery of their elbow flexion function. However, all patients achieved grade-3 or better elbow flexion strength according to the grading system of the Medical Research Council. We recommend this safe, simple and effective Oberlin procedure for brachial plexus injuries involving the C5-C6 or C5-C6-C7 nerve roots.

Date: 2012-11-29
Session: Trauma: Forearm
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Room: Rashid C

Abstract no.: 32648

EXPOSURE OF BOTH THE RADIUS AND ULNA THROUGH A SINGLE POSTERIOR APPROACH

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Exposure of both the radius and ulna is usually done through two separate incisions. All approaches using a single incision are somewhat limited and have some disadvantages. Most of the described approaches for the forearm need muscle detachment which is considered a precursor for radioulnar synostosis. This described approach permits adequate exposure of the whole shafts of the radius and ulna through a single incision with no detachment of any muscle. This approach was used in 112 forearms in 111 patients. The incision extends in a straight line from the lateral humeral epicondyle to the ulnar head. The radius is exposed between the extensor digitorum and the extensor carpi radialis brevis. In the proximal third of the radius the supinator muscle is striped subperiosteally from distal to proximal protecting the posterior interosseous nerve and in the distal third the abductor pollicis longus and extensor pollicis brevis muscles are mobilized. The ulna is exposed between the flexor carpi ulnaris and the extensor carpi ulnaris muscles. The average time for the whole procedure was 75 minutes. At follow-up (Average four and a half years) there were accepted scars in all the forearms and there was no vascular, nerve injury or radioulnar synostosis in any of the forearms. All the fractures united primarily except two fractures which required reoperation.

Date: 2012-11-29
Session: Trauma: Forearm
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Room: Rashid C

Abstract no.: 32658

DIAPHYSEAL FRACTURES OF FOREARM

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METHODOLOGY: A prospective study was done from June 2009 to Aug 2011, including 40 patients with fractures forearm. In Group I 20 patients were subjected to open reduction and internal fixation with 3.5 mm stainless steel LCDCP and nonlocking screws. In Group II, 20 patients were managed by 3.5mm LCP and locking head/nonlocking screws. Clinical assessments regarding pain and function, radiological assessment were undertaken at the final follow-up. **RESULTS:** The mean time to definite radiological bony union in the Group I was 16 weeks and in the Group II was 18 weeks. Results of functional outcome were based on status of fractures union and range of movement. Excellent & satisfactory results were observed in 88% cases in Gp I and 92% cases in Gp II. **CONCLUSION:** Both were equally effective in treating diaphyseal fractures of forearm. Locking plate offers the flexibility of being used as compression plate, as a bridging fixator, or as a system combining both techniques.

Date: 2012-11-29
Session: Trauma: Forearm
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Room: Rashid C

Abstract no.: 32261

PERCUTANEOUS OSTEOSYNTHESIS OF GALEAZZIA FRACTURE-DISLOCATION

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From January 2004 to January 2008 thirty two patients with Galeazzi type fracture-dislocation of the forearm in young adults were treated by percutaneous fixation of fracture by stacked elastic nailing at our Institute. There were 25 male & 7 female, age group (range 20-56) years. Surgery was performed within 48 to 72 hr under the guidance of image intensifier. Medullary cavity was filled with two elastic nails of unequal lengths and diameter. One nail acts as a reduction nail and other acts as stabilizing nail. The stability is achieved by the flexibility and elasticity of the nails and crowding of the medullary canal and anchorage they gain in the radial diaphysis. After one year follow-up 28 patients were good, 4 fair and none poor. It is concluded that early closed reduction and fixation of fracture by two elastic rods re-establishes the normal relationship of the fractured fragments and the distal radio ulnar joint without repair of the ligaments. Key Words; Intramedullary Nail, Elastic Nail , Galeazzia Fracture Dislocation, stacked nail.

Date: 2012-11-29
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Time: 14:30 - 16:00
Room: Rashid C

Abstract no.: 31225

INCIDENCE AND OUTCOME OF MONTEGGIA INJURIES

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Introduction: Monteggia lesion is a rare injury of forearm fractures, defined as a fracture of the ulna associated with radio-capitellar dislocation and often associated with persistent radial head dislocation, forearm deformity, elbow stiffness and nerve palsies. The purpose of the present study was to examine the results of conservative and surgical treatment. Methods: In a 10-year period, 47 non-selected trauma patients were included in our retrospective study. Data were obtained from our computerized patient records data base. We collected data on all victims admitted to the hospital with diagnosed Monteggia injuries, but only patients with complete data and follow up have been included into the present study. Results: The mean age was 47.6 years (range 2.6 to 86.6), 19 (45.2%) were males and 23 (54.8%) were females, 33 (78.6%) patients were adults, 9 (21.4%) were children. In our study population a total of 7 (16.6%) Monteggia fractures type I, 9 (21.4%) type II, 1 (2.4%) type III and 4 (9.3%) type IV have been observed according to the Bado classification. Ten (23.8%) Monteggia Type I equivalents and 11 (26.2%) Type II equivalents have been observed in the adult group. A total of four fractures (9.5%) were open according to Gustilo classification: 2 (4.76%) GI, 1 (2.38%) GII, and 1 (2.38%) GIII. Conclusions: Closed reduction is the primary goal of treatment in paediatric patients. Surgical treatment becomes necessary if conservative treatment fails or in adult patients. Further clinical trials need to be conducted to prove our findings.

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Room: Rashid C

Abstract no.: 31030

INTERNAL FIXATION SUPRACONDYLAR FRACTURES OF THE DISTAL HUMERUS: A FINITE ELEMENT ANALYSIS

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Fractures of the distal humerus are usually treated with two reconstruction plates in a parallel or perpendicular position. There are no published biomechanical studies on supracondylar level of the distal humerus. A finite element analysis of two different methods of internal fixation, with two reconstructive plates in parallel and perpendicular, of distal humerus fractures according to the fixation techniques was performed in our biomechanical study. The gap, located 2.5 cm above the fosse olecrani, length 1 cm, mimicked the unstable fracture in supracondylar region. Six screws were set on each plate, three on each side of the gap. We performed static bending load of 100 N on the corresponding segment of the distal humerus in a flexion position of 75 degrees, the axial load in a flexion position of 5 degrees and lateral loads on the radial condyle. We analyzed the shifts in the gap and stress on the implant during load. Shift of the gap, the bending load and lateral load are significantly larger than the axial load, and thus have a greater significance in the overall strength analysis of the model. Displacements in the axial load are about 75% higher in perpendicular compared with parallel positioning plates. Displacements in bending loads are about 35% higher in perpendicular position, while no significant differences in increments of lateral load on the radial condyle. The perpendicular position of plates in fractures of the supracondylar distal humerus in the analysis finite elements method is mechanically more stable than the perpendicular position.

Date: 2012-11-29
Session: Trauma: Forearm
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Room: Rashid C

Abstract no.: 30887

TREATMENT OF NEGLECTED DISLOCATIONS AND FRACTURE DISLOCATIONS OF THE ELBOW USING ILIZAROV EXTERNAL FIXATOR

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Neglected dislocations and fracture dislocations are rare, but they are occasionally seen in developing countries. Aim of the study: This study was carried out to assess the results of treatment of neglected elbow dislocations and fracture dislocations using open reduction and early active motion in an Ilizarov external fixator. Patients and methods: The material of this work consisted of seven patients of neglected elbow dislocations and fracture dislocations. 5 cases (71.4%) were not associated with fractures and two cases (28.6%) were associated with fracture of the radial head. Three cases (42.9%) had in addition a significant bar of heterotopic ossification. All patients were treated by open reduction, excision of the loose fragments of the radial head when present, excision of the heterotopic bone when present, and a hinged Ilizarov external fixator. Results: The Mayo elbow performance score was used to evaluate the results. The mean score at the end of follow up ranged from 70 to 97 points out of 100 points (mean: 87 points \pm 7.32). Three cases (42.9%) were considered excellent, three (42.9%) were good, and one (14.3%) was fair. The range of movements at the end of follow up ranged from 60 to 120 degrees (mean: 90 \pm 23.09). The improvement of the range of movements was statistically significant. Conclusion: Open reduction and early active motion in an Ilizarov external fixator provides an excellent option of treatment for neglected elbow dislocations and fracture dislocations. It restores congruent joint reduction, stability, and functional range of movements.

Date: 2012-11-29
Session: Trauma: Forearm
Time: 14:30 - 16:00
Room: Rashid C

Abstract no.: 31358

MONTEGGIA FRACTURE - 36 MONTHS FOLLOW UP

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INTRODUCTION: The Monteggia fracture is rare, associate with bad functional results. We give our experience in the management of this injury, our functional results and negative correlative association. **METHODS:** Retrospective revision of the patients with Monteggia fracture treated in 96 months period (January 2002-January 2010). Classification was done by Bado system and subdivided by Jupiter subclassification. Associated lesions and type of osteosynthesis was registered. Functional results were evaluated by elbow score system, pain by analogic visual scale and stability of the elbow tested in varus-vlagus plane in different angles. **RESULTS:** In eleven patients (6 women) with mean age 55,6 years (21-74) the type II fracture was the most frequent (7 cases), all subtype a). Nine patients had associated bone lesions around the elbow (5 radial head fracture, 8 coronoid process fracture and 1 open shaft humeral fracture). The mean elbow score was 73,1 points (55-85 points) with 7 good, 3 fair and 1 bad result. The rate of new surgery was 9 in 11 patients: one because mechanical failure of the osteosynthesis; one radio-ulnar sinostosis; one non-union of the coronoid process; six by mechanical intolerance of the implants. **CONCLUSION:** This type of fracture is rare and severe. The approach is difficult because there weren't a standard algorithm to deal with it. The worst results are associated with type II fracture, subtype a); association with radial head and coronoid process fracture and necessity of new surgical procedure because whatever motive.

Date: 2012-11-29
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Time: 14:30 - 16:00
Room: Rashid C

Abstract no.: 31397

FIXATION OF ANTERIOR CORONAL FRACTURES OF HUMERAL TROCHLEA

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INTRODUCTION: Isolated coronal fracture of trochlea are rare. The difficulty in surgical access to the fracture, intraarticular nature of the injury and fracture comminution make the internal fixation a challenging task. **OBJECTIVES:** This article reports the fixation techniques and outcome in five cases of anterior coronal trochlea fracture that we have treated over a period of six years. **METHODS:** We treated five cases of anterior coronal fracture of the trochlea over a period of six years. The fracture was accessed through the medial approach to the elbow, and anatomically reduced. Three fractures were fixed with 4mm AO screws; the remaining two were fixed with K-wires because of fracture comminution. They were followed at regular intervals and functional outcome was assessed using the Mayo Elbow Performance Index (MEPI). The mean duration of follow up was 2.72 years. **RESULTS:** The fracture united after a mean period of 14 weeks. Clinical evaluation revealed mean MEPI of 92 with four patients had excellent functional outcome and the other one had a good outcome. One patient needed change in the job because of pain after prolonged work. Patients with comminuted fracture and osteochondral damage had relatively bad outcome. **CONCLUSION:** Accurate diagnosis, appropriate radiography and stable internal fixation provide optimal result in isolated trochlea fracture. Fracture comminution and osteochondral damage carry relatively bad prognosis. The small fracture fragments should not be excised and can be fixed with K-wires with appropriate postoperative rehabilitation modification.

Date: 2012-11-29

Session: Miscellaneous: Periprosthetic Infection

Time: 17:00 - 18:30

Room: Rashid C

Abstract no.: 32731

EVALUATION OF SONICATE FLUID CULTURES IN COMPARISON TO HISTOLOGICAL ANALYSIS OF THE PERIPROSTHETIC MEMBRANE FOR THE DETECTION OF PERIPROSTHETIC JOINT INFECTION.

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The purpose of this prospective study was to evaluate the diagnostic efficacy of sonicate fluid cultures and the histological analysis of the periprosthetic membrane for the detection of periprosthetic joint infection (PJI). The histological samples were evaluated according to the consensus classification of periprosthetic membranes as defined by Morawietz and Krenn. All explanted endoprosthesis were subject to sonication. Additionally a synovial aspiration and microbiological culture of tissue samples were performed for each patient. 23 of the 59 included patients had an established PJI. Sonication achieved the highest sensitivity out of all diagnostic methods with 91% and a specificity of 81%. The histological classification of the periprosthetic membrane achieved a sensitivity of 87% and a specificity of 100%. In 3 cases of PJI a pathogen was isolated solely by sonication while all other microbiological methods were negative. In seven cases there was a positive bacterial culture through sonication with negative histology. Our results show a high correlation between the microbiological and histological results. In our patient group sonication achieved the highest sensitivity out of all diagnostic methods and was more sensitive than conventional microbiological methods.

Date: 2012-11-29

Session: Miscellaneous: Periprosthetic Infection

Time: 17:00 - 18:30

Room: Rashid C

Abstract no.: 32329

BACTERIOLOGY SWABS IN PRIMARY TOTAL KNEE ARTHROPLASTY

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Objective: An early detection of possible peri-prosthetic infection may lead to an earlier and potentially less invasive treatment in infected total knee arthroplasty. The purpose of the present study was to evaluate retrospectively the current clinical practice of intra-operative swab taking during primary TKA. Methods: A total of 206 primary TKA were analysed retrospectively for intra-operative bacteriology swabs and subsequent peri-prosthetic infection. All bacteriology swabs were obtained in a standardized manner including a tissue sample. If pathogens were detected, they were routinely identified and tested for susceptibility. Moreover notification of bacteria count includes either a semi-quantitative or quantitative measure. Data was statistically evaluated concerning standard descriptive statistics as well as using the chi-square test regarding subsequent peri-prosthetic infection, timing of the prophylaxis as well as pre-operative laboratory results and positive bacteriology swabs. Results: Bacteria were identified in 43.4% of the swabs with coagulase negative staphylococci being the most frequently isolated pathogens (52.2%). Regarding the contingency tables and chi-squared tests, neither a positive intra-operative swab nor the other parameters investigated (timing of the prophylaxis and pre-operative laboratory results) leads to a subsequent peri-prosthetic infection. Conclusions: Bacteriology swabs during primary total knee arthroplasty are no adequate measure to predict subsequent peri-prosthetic infections, even if augmented with a tissue sample. In case that sample taking is aspired during primary TKA, it should be performed in accordance with current recommendations for the detection of peri-prosthetic joint infections by the means of bacterial culture.

Date: 2012-11-29

Session: Miscellaneous: Periprosthetic Infection

Time: 17:00 - 18:30

Room: Rashid C

Abstract no.: 31531

IS TWO-STAGE SUPERIOR TO SINGLE-STAGE REVISION IN THE TREATMENT OF INFECTION AFTER SHOULDER ARTHROPLASTY? A SYSTEMATIC REVIEW

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Infection is widely regarded as one of the most devastating complications leading to revision total shoulder replacement. Various studies have published outcomes of these managements, although these studies comprise a heterogeneous body of literature. To compare the effectiveness of different managements of infection associated with shoulder arthroplasty, we conducted a systematic review in which all published studies were evaluated. We identified 20 studies that addressed revision surgery for the treatment of infection after shoulder arthroplasty. This search included 104 patients with two-stage revision arthroplasty, 41 patients with one-stage arthroplasty, 23 patients with only spacer placement. 89 patients received other treatments which included resection arthroplasty, debridement, antibiotics and irrigation. The mean age of all patients was 61.6 years. Among the 20 studies, 6 different outcome instruments were used, including those of Neer scale; Constant score; American Shoulder and Elbow Surgeons score; University of California, Los Angeles score; Penn score; and visual analog scale. We found no significant difference in complication and recurrent infection rates among three groups (two-stage revision, one-stage revision, and spacer group) except the complication rate between one-stage and spacer revision groups ($P < 0.001$). Spacer group has the mean lowest recurrent infection rate(2.78%) and complication rate(3.34%) and highest patient's satisfaction rate(100%). In contrast, one-stage revision group has the highest mean recurrent infection rate(11.82%) and complication rate(37.1%) and lowest patient's satisfaction rate(65.6%). This analysis favored the two-stage revision over the direct-exchange shoulder arthroplasty. Permanent or prolonged implantation of the spacer may be a useful alternative in selected patients.

Date: 2012-11-29

Session: Miscellaneous: Periprosthetic Infection

Time: 17:00 - 18:30

Room: Rashid C

Abstract no.: 32195

MANAGEMENT OF INFECTION AT THE SITE OF TOTAL HIP AND KNEE ARTHROPLASTIES

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This study aimed to evaluate the clinical outcomes of the two-stage reconstruction of infected total hip and total knee replacements using antibiotics-impregnated cement spacer and beads. Total 114 cases (49 hips and 65 knees) operated between 1993 and 2006 were included in this study with the mean follow-up of 48.7 months. The reconstructive procedure consisted of the first stage of removal of the prostheses, debridement and implantation of static or mobile antibiotics-impregnated cement spacer and beads, followed by the second stage reimplantation. The final outcomes were evaluated according to the eradication of infection and restoration of joint function related to the causative organisms, operative techniques and host immunity. The two-stage procedure was successful in 43/49 hips (87.8%) with Harris Hip Score of 82.7 and 61/65 knees (93.8%) with HSS score of 77.8. Two-stage reconstruction with antibiotic-impregnated cement spacer is the most reliable option at present.

Date: 2012-11-29

Session: Miscellaneous: Periprosthetic Infection

Time: 17:00 - 18:30

Room: Rashid C

Abstract no.: 30995

VASTUS LATERALIS MUSCLE FLAP FOR INFECTED HIPS AFTER RESECTION ARTHROPLASTY

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Introduction: We evaluated the potential of a vastus lateralis muscle flap in controlling infection after resection arthroplasty of the hip. Methods: We retrospectively reviewed 119 patients with 120 chronic infections after resection arthroplasty treated with this procedure. The flap was fixed with Mitek anchors in the acetabular cavity. Results: The mean duration of infection after resection before the muscle flap procedure was 6.5 months (2 to 13). The patients had previously undergone a mean of 4.9 operations (2 to 25). In all patients the infected cavity was the origin of the persistent infection. The mean follow-up was for 2.6 years (1.0 to 4.7). No patient had recurrent infection post-operatively and all had an improvement in the pain and better quality of life.

Date: 2012-11-29

Session: Miscellaneous: Periprosthetic Infection

Time: 17:00 - 18:30

Room: Rashid C

Abstract no.: 31776

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

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Introduction: To Analyze of the inherent risk factors associated with deep infection and the efficacy of management with prolonged suction drainage without removal of implants. **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. **Conclusions:** 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.

Date: 2012-11-29

Session: Miscellaneous: Periprosthetic Infection

Time: 17:00 - 18:30

Room: Rashid C

Abstract no.: 33057

SURGICAL TREATMENT OF DEEP PERIPROSTHETIC INFECTION OF THE KNEE JOINT.

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Aim: To improve the surgical treatment results in patients with periprosthetic infection of knee joint. **Materials & Methods:** From 1995-2011, data of 24 patients with periprosthetic infection of knee joint was analyzed. The following factors are the indication for surgery: 1. Time, when the inflammatory process started 2. Clinical & radiological signs of instability of prosthesis 3. Microbiological analysis from the joint and the sinus 4. Immuno-serological data The following surgical methods were performed: (i) Removal of endoprosthesis followed by arthrodesis with external fixators or internal fixators -13 patients, (ii) Only Surgical curettage - 7 patients, (iii) Implantation of cement spacer (2 stage method) - 4 patients. **Results:** Compression arthrodesis of knee joint was done in 1 patient after removal of cement spacer. Inflammatory process get arrested after surgical curettage in 6 patients, and in 1 patient we did compression arthrodesis. The gait was recovered in all patients and the inflammatory process was suppressed after compression arthrodesis. **Summary:** Differential approach to the surgical treatment allows: (i) to suppress the inflammatory process, (ii) to recover the weight bearing ability of the joints. The 2 stage surgical treatment helps to recover the function of the knee joint.

Date: 2012-11-29

Session: Miscellaneous: Periprosthetic Infection

Time: 17:00 - 18:30

Room: Rashid C

Abstract no.: 30970

SEPTIC KNEE REPLACEMENT - CLINICAL OUTCOME AFTER TWO-STAGE REVISION COMPARED TO NON-SEPTIC PROTHESIS CHANGES

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Introduction: The amount of total knee replacements (TKA) increases rapidly, but the rate of septic revision surgery is also rising. The clinical results for these procedures are inconstant. The aim of our study was the analysis of the clinical outcome after septic knee revision surgery compared to non-infected prosthetic changes. Methods: In this retrospective study 118 patients were included. Thirty-three patients had a septic two-stage revision surgery. The mean followup was 26.5 months. For clinical evaluation we used the Oxford Knee score, Knee Society score, Turba score, and Kujala score. The health-related quality of life was determined with the SF-36 score and the visual analogue pain scale (VAS). Results: The surgeries were performed 76 (min 2, max. 218) months after index TKA on average. The clinical outcome in both groups was not significant different in the Oxford Knee score, Turba, and Kujala score. The persistent pain after surgery was 2.8 (septic) and 2.6 (aseptic). The SF-36 scores for physical outcome revealed for the septic group 35.3 points and 49.6 points in the psychic results. In the aseptic group results were 36.9 points (physically) and 51.4 points (mentally). The Knee Society score was significantly higher in aseptic patients (124.1 points) than in septic individuals (105.2 points). The re-revision rate after septic knee revision was 10.6% and after non-infected revision 8.7%. Conclusion: Aseptic and septic knee prosthesis revision surgery leads to good medium-term clinical results. In particular, the clinical outcome after septic two-stage knee revisions is weaker in the Knee Society score.

Date: 2012-11-29

Session: WOC Symposium

Time: 10:30 - 12:00

Room: Rashid D

Abstract no.: 33439

**A PROFORMA FOR THE MANAGEMENT OF FRACTURES UNDER
CIRCUMSTANCES OF REDUCED RESOURCES**

Anil JAIN

., . (INDIA)

Date: 2012-11-29
Session: WOC Symposium
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 33440

**CONSERVATIVE TREATMENT OF FRACTURES OF THE HUMERUS,-
PROXIMAL AND MID-SHAFT**

James WADDELL

., . (CANADA)

Date: 2012-11-29

Session: WOC Symposium

Time: 10:30 - 12:00

Room: Rashid D

Abstract no.: 33442

**CRUSH FRACTURE IF THE CALCANEUM, A NEW SURGICAL
TREATMENT**

Bahiru BELZIBEH, Michael LAURENCE

., . (UNITED KINGDOM)

Date: 2012-11-29
Session: WOC Symposium
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 33443
NEGLECTED FRACTURE OF THE NECK OF FEMUR
Anil JAIN
., . (INDIA)

Date: 2012-11-29

Session: Research: Biomaterials III

Time: 14:30 - 16:00

Room: Rashid D

Abstract no.: 33126

THE FUNCTIONAL-ZERO METHOD ANALYSIS OF JOINT MOBILITY.

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Introduction: We are using hand joints incompletely in everyday movements occurring on the selected near definite position generally. Shifting phalanx mobility to the selected near definite position is more important than trying to recover full amplitude of joint mobility during the old hand injury with the limitation of movements. Method: we offer to use the selected near definite position as a reference point instead of the traditional neutral-zero position. This position, we named as functional-zero position. The Positions of utmost phalangeal deviation is not exact. It may have different variations according to population, patient features and the investigators. Because of this, we consider that the joint mobility in degrees is not reliable and also not compulsory. We think that, to represent joint motion completely, it will be enough to describe 7 positions of phalanges of the hand at any plane of movements. They are as follows: (i) two maximal deviation – for example: full extension & full flexion, (ii) functional zero (iii) each 2 positions in flexion & extension sectors. Deriving joint mobility from less number of positions will give the non-reliable results. Results: Used in more than 1000 patients. Had the opportunity to determine active & passive joint movements. Patients with old injury of joints, tendons, muscles and nerves are studied. According to the study, the above-described method is working effectively. This method allows us to compare the results of the different treatment stages (before, during, after). Summary: We recommend using this Functional-zero position method in clinical practice.

Date: 2012-11-29

Session: Research: Biomaterials III

Time: 14:30 - 16:00

Room: Rashid D

Abstract no.: 33095

BIOMECHANICAL TESTING OF TWO TYPES OF SURGICAL TREATMENT FOR DISTAL RADIUS FRACTURE- A CADAVERIC STUDY ABOUT 20 PAIRS LOCKING VS CONVENTIONAL PLATES.

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INTRODUCTION: This study compares the biomechanical stability of palmar non-locking and locking plate osteosynthesis for fixation of unstable extraarticular distal fractures, using human cadaveric specimen. **METHODS:** A currently ongoing study is described. Pairs of frozen cadaveric human radii were harvested. Bone mineral density was determined. A dorsal 10 mm wedge osteotomy was realized. The pairs of radii were separated into two sets. One set of pairs compared a Tifix Classic titanium locking plate with a non-locking one of identical geometry. Another set compared a Tifix Classic locking plate with a Tifix Classic Plus one. In the main tests, specimen were dynamically, axially loaded with 10 N preload and an increasing load from 100N for up to 300 N. **RESULTS:** In the preliminary static test, no advantage of loosening was detected. However during dynamic testing differences became evident. The mode of failure in non locked construct was a loosening in the bone, whereas in the locked ones, it was material breakage. The classic system showed considerably higher strength than the classic plus system. **CONCLUSION:** Dynamic testing seems important to evaluate the influence of angular stability in distal radius osteosynthesis. Under dynamic conditions, locking increases stability. Both locked implants provide adequate stability to resist to the physiological loads in the clinical application during therapy in the postoperative period. However, in this in vitro experiment, there were differences of failure load between the two types of locked systems, depending on their design criteria.

Date: 2012-11-29

Session: Research: Biomaterials III

Time: 14:30 - 16:00

Room: Rashid D

Abstract no.: 31395

**PERIARTHRITIS SHOULDER A COMPARISON BETWEEN
MANIPULATION DONE UNDER GENERAL ANAESTHESIA OR
INTERSCALENE BLOCK**

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Introduction: Shoulder manipulation is the preferred method of treatment in periarthritis shoulder. This is a comparative study between shoulder manipulation done under general anaesthesia versus interscalene block. Methods: 50 patients were included in the study in the age group 40 to 60. Patients with preexisting neurological disorders, other joint pathology, psychiatric illness, postoperative cases and general debilitating diseases were excluded. All patients underwent routine blood investigations and were randomised to receive manipulation either under general anaesthesia or nerve block. Post procedure protocol was the same for both groups. The constant-murley shoulder outcome score and the DASH score (disabilities of the arm, shoulder and hand score) was done at 4 weeks, 3 months, 6 months and one year. Results: Two patients were lost to follow up, one in the general anaesthesia group and one in the nerve block group. The patients in the nerve block group had an average constant score of 10 and DASH score of 19 at the end of one year as compared to the general anaesthesia group which had a constant score average of 12 and dash score of 27. Compliance with the procedure was better in the nerve block group based on our self-completion proforma for post procedure experience. Conclusion: Shoulder functional outcome and compliance was comparatively better in patients who underwent shoulder manipulation under nerve block. A good technique of nerve block and in experienced hands nerve blocks gives a better outcome for shoulder manipulation.

Date: 2012-11-29

Session: Research: Biomaterials III

Time: 14:30 - 16:00

Room: Rashid D

Abstract no.: 33014

THE EFFECT OF CYCLICAL CHEMOTHERAPY ON THE MECHANICAL AND STRUCTURAL PROPERTIES OF BONE IN A RABBIT MODEL OF LIMB LENGTHENING.

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We investigated the effect of adjuvant and neoadjuvant chemotherapy regimens on the tibial regenerate after removal of the external fixator in a rabbit model of distraction osteogenesis using New Zealand white rabbits. 40 rabbits were randomly distributed into two groups. In the neoadjuvant group, half received 1mg/kg cisplatinum & 2mg/kg adriamycin at eight weeks of age followed by 1mg/kg cisplatinum & 4mg/kg adriamycin at ten weeks of age. The rest received an identical volume of normal saline using the same regimen. The adjuvant group differed only in the timing of the chemotherapy infusion. Half received the initial infusion ten days prior to the osteotomy, with the second infusion four days following the osteotomy. Again, the remaining rabbits received an identical volume of normal saline using the same regimen. This produced an identical interval between infusions and identical age at osteotomy in both groups. All rabbits underwent tibial osteotomy at 12 weeks. Distraction started 24hours after osteotomy at 0.75mm a day for 10 days, followed by 18 days without correction to allow for consolidation. At week 16 there was no difference in Bone Mineral Density (BMD), Bone Mineral Content (BMC) or volumetric Bone Mineral Density (vBMD) in the adjuvant group. Neoadjuvant chemotherapy appears to have a significant detrimental effect on BMD, vBMD and BMC. Despite this, there were no significant alterations in the mechanical properties of the regenerate. Histologically there was a trend for increased cortical thickness in the control groups, however this did not prove statistically significant.

Date: 2012-11-29

Session: Research: Biomaterials III

Time: 14:30 - 16:00

Room: Rashid D

Abstract no.: 32267

LASER-MODIFIED COCRMO- AND AL2O3- SURFACES FOR USE IN THE TOTAL JOINT ARTHROPLASTY - A TRIBOLOGICAL INVESTIGATION

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Introduction: Surface wear of corresponding tribological pairings is still a major problem in artificial joint surgery. The study presented here aims at developing wear reduced surfaces to utilize them in total joint arthroplasty. Method: Using a pico-second laser, samples of medical CoCrMo metal alloy and Al₂O₃ ceramic were permanently patterned by material removal. The resulting channels served as depots for wear debris to minimize the so-called 3-body-wear between the contact surfaces. The subsequent tribological investigation employed a ring-on-disc method. Results: The results showed that those samples with modified surfaces were more wear resistant than those with a regular surface. Using calf serum as lubricating medium, the wear volume of the structured CoCrMo samples was 8 times lower than that of regular samples. The wear volume of structured Al₂O₃ samples decreased by 4.5 times. Compared to distilled water, using calf serum as lubricating medium reduced the wear volume of CoCrMo samples by about 3.5 times. Discussion: The results from this study are very promising. Further research is warranted. The use of simulators meeting the natural conditions in the joint and in vivo studies with living organism are the logical consequence to the positive results achieved in this study.

Date: 2012-11-29

Session: Research: Biomaterials III

Time: 14:30 - 16:00

Room: Rashid D

Abstract no.: 32277

BIOMECHANICAL CHARACTERIZATION OF A SYNTHETICAL FRACTURE MODEL OF THE OSTEOPENIC DISTAL HUMERUS

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Introduction- Traditionally biomechanical testing in the distal humerus has been performed with cadaveric specimen. Although realistic results can be gained, this model is problematic due to specimen shortage and reproducibility. Aim of this study is thereby the characterisation of a synthetic testing-model of the osteopenic distal humerus based on an artificial composite-bone. Methods- For the development of the fracture model, composite-artificial bones (sawbones 4th-Generation) were used. A reproducible C2-fracture was created. The stiffness of an osteosynthetic construct using an exact 90° formation of 2 locked small-fragment reconstruction plates (Litos, Germany) or 2 conventional plates (marquardt, Germany) was tested for stiffness. Quasistatic-testing was performed with a universal testing machine in simulated extension and flexion with 8 models each. The distal part of the humerus was counter-forced on a specifically constructed rocker-mechanism realizing a physiological force-transmission relation. Tested was up to 50N, the stiffness was determined between 20/40N. Results- In flexion a stiffness of 45Nm/mm (± 6.84) was measured for conventional and 54Nm/mm (± 3.71) for locked plates (p 0.005, U-test, power 0.99). In extension a stiffness of 280Nm/mm (± 42.9) was measured for conventional plates compared to 411Nm/mm (± 51.48) for locked plates (p 0.005, U-test, power 0.99). Discussion- Construction of the set-up was orientated at the works of Schuster et al (JOT 2008), cadaveric bones where used in that study. Although the total results vary compared to our study, the relationship between conventional and locked plates is very similar (1.17-1.2 in flexion/1.39-1.47 in extension). Compared to cadaveric testing our results show much lower standard deviations.

Date: 2012-11-29

Session: Research: Biomaterials III

Time: 14:30 - 16:00

Room: Rashid D

Abstract no.: 32527

PERONEAL H-REFLEX IN PIRIFORMIS SYNDROME

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BACKGROUND: The electro-diagnostic studies defining piriformis syndrome was elaborated according to the peroneal H-reflex. The aim is to define electrical criteria with delay in latency and decreased amplitude during stress testing. **METHODS:** 18 patients suspected to suffer from piriformis syndrome after ruling out other causes of spinal affection were tested with EMG exam on both sides in neutral and dynamic positions: the hip in adduction-internal rotation. The amplitude and latency of the H-reflex on the peroneal nerve were studied and compared with the opposite painless side. **RESULTS:** The latency of the peroneal H-reflex at the normal side was delayed by 0.7msec (0 to 2msec) with the stress test. At the painful side, the delay was 5.4msec (2 to 10msec), and when we excluded two patients with 2 msec delay confirmed not having piriformis syndrome, the average was 6msec (3 to 10 msec). The amplitude of the peroneal H-reflex at the normal side was decreased by 14% with the stress test, 70% (30% to 100%) at the painful side and 74% (50% to 100%) after excluding patients confirmed not having piriformis syndrome. **DISCUSSION:** Our results confirm the importance of the peroneal H-reflex in diagnosing piriformis syndrome. The delay of latency at stress testing should be considered positive above 3msec. At the same time the amplitude of the reflex has decreased more than 50% compared with the reflex in neutral position of the limb. Combined to clinical exam, these values are considered highly suggestive of piriformis syndrome.

Date: 2012-11-29

Session: Research: Biomaterials III

Time: 14:30 - 16:00

Room: Rashid D

Abstract no.: 32674

INFLUENCE OF SPINAL CORD INJURY ON BODY COMPOSITION WITHIN 1 YEAR OF INJURY

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INTRODUCTION: Spinal cord injury (SCI) causes immediate and in some regions of the body permanent gravitational unloading. Muscle atrophy is a frequently cited complication occurring after SCI and this study was conducted to evaluate the longitudinal changes in body composition by dual energy X-ray absorptiometry (DEXA). **METHODS:** The study was carried out on 106 patients with acute SCI and patients were subjected to DEXA scan at the time of presentation and was repeated at 3, 6 and 12 months. **RESULTS:** Average 23.8% loss in lean body mass (LBM) in lower limbs was seen one year after injury. More decrease was seen in motor complete injury (29%) than in motor incomplete injuries (18.2%). LBM of upper extremities was decreased at one year only in tetraplegics. Average increase in fat mass was 2.8% in lower extremities at one year. Three times more increase in fat mass was seen in motor complete injuries than in motor incomplete injuries. Fat mass increased in upper extremities in tetraplegics by 7% at one year. **CONCLUSION:** patients with spinal cord injury not only lose motor and/or sensory functions, may experience dramatic muscle mass changes. This study shows marked decrease in lean body mass; while fat tissue is higher in all sublesional sites. These changes usually depend on level and severity of lesions. It will be prudent to take measures like early mobilization, rehabilitation, and specific interventions to prevent deterioration in body composition early in the course of the spinal cord injury.

Date: 2012-11-29

Session: Research: Biomaterials IV

Time: 17:00 - 18:30

Room: Rashid D

Abstract no.: 31388

PLANTAR FASCIITIS: A RANDOMIZED CONTROLLED STUDY TO COMPARE THE EFFICACY OF CORTICOSTEROID THERAPY WITH PLATELET-RICH PLASMA THERAPY

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Introduction: Plantar fasciitis is one of the commonest foot ailments seen in a regular orthopaedic clinic. There are a number of modalities available to treat this condition, of which corticosteroid injection is, perhaps, the most popular. However, recent years have seen an increased use of platelet-rich plasma (PRP) injections in various clinical situations such as plantar fasciitis. Methods: We undertook a prospective randomised study to compare the efficacy of traditional corticosteroid injection with PRP injection, in a cohort of patients. 60 patients were allocated equally to either PRP group or corticosteroid group. The patients were assessed before the injections and again at three months after the injections using Visual Analogue Score (VAS), the Foot & Ankle Disability Index (FADI) and American Foot and Ankle Score (AFAS). Results: In our study, PRP group has shown significant benefit when compared to corticosteroid group ($p < 0.001$). Conclusion: We believe that PRP therapy is more effective than corticosteroid therapy for plantar fasciitis.

Date: 2012-11-29

Session: Research: Biomaterials IV

Time: 17:00 - 18:30

Room: Rashid D

Abstract no.: 31179

ENDOSCOPIC SURGERY FOR PLANTAR FASCIITIS & CALCANEAL SPUR

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Objective: evaluate the surgical treatment of planter fasciitis by endoscopic release.
Methods: we treat 12 feet (9 patients) by endoscopic release of planter fascia in addition to spur removal after more than 6 m of conservative treatment. The patient lies in supine position on the operating table we start to open medial port which was made under fluoroscopic control 5 mm deep to the plantar fascia and 10 mm anterior to calcaneus attachment of the plantar fascia. We use another lateral port by passing a blunt trocar deep to the plantar fascia through the medial port. A 4-mm- 30o arthroscope was passed through the medial port, and the operative devices were inserted through the lateral port. A motorized shaver was used for making a working space to excise the fat tissue along with a portion of the flexor digitorum brevis muscle. If a calcaneus spur was present, it was resected by means of an arthroscopic burr. After exposure of the plantar fascia, its medial 2/3 was removed with a curved tip Knife
Results: The mean score depends on Ankle-Hindfoot Scale was 59.1points before surgical treatment and 87.5points at 18 months after surgery (P value=0001). The average to full weight bearing after surgery was 12.8-9.1 days. All patients returned to preoperative full activities by a mean of 9.9-3.2 weeks.
Conclusions: Endoscopic surgery for plantar fasciitis through a medial and lateral approach allows a very good field of vision and permitting easy release of the plantar fascia and heel spur resection.

Date: 2012-11-29

Session: Research: Biomaterials IV

Time: 17:00 - 18:30

Room: Rashid D

Abstract no.: 32931

THE ROLE OF LOCAL ANAESTHESIA IN KNEE ARTHROSCOPY

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In current times, knee arthroscopy is the most common orthopaedic procedure. Over the years, the preferential method of anaesthesia has been general or spinal anaesthesia. The use of local anaesthesia (LA) in knee arthroscopies has been mentioned in surprisingly few orthopaedic publications over the past few decades. This reflects the very moderate role of LA in general compared to other forms of anaesthesia, even though the majority of operations in orthopaedic practice can be regarded as minor procedures. We performed a retrospective study of 433 patients who underwent knee arthroscopy under LA over a period of 5 years. We excluded children and those patients with reduced mental capacity, for which the use of LA may be less appropriate. The anaesthetic routinely used is Xylocaine 2% with adrenaline. We evaluated pain during procedure and after the procedure by recording a Visual Analogue Score (VAS). Over a 5 year period (07/2005-06/2010), 433 knee arthroscopies have been performed under LA in our general orthopaedic practice. The male:female ratio was 52:48 %, mean age 48 years (range 14-84). The mean VAS during injection was 1.8 (SD 2) and the mean VAS during the procedure was 0.9 (SD 1.7). There have been no complications reported related to LA. We have not encountered type 1 allergic reactions. LA in arthroscopies is a safe and cost-effective method of anaesthesia. Our experience demonstrates that LA in arthroscopies is a convincing alternative to other forms of anaesthesia and should be considered as gold standard anaesthesia in knee arthroscopy.

Date: 2012-11-29

Session: Research: Biomaterials IV

Time: 17:00 - 18:30

Room: Rashid D

Abstract no.: 32859

HIP ARTHROSCOPIC MANAGEMENT OF PATIENTS PRESENTING WITH FEMOROACETABULAR IMPINGMENT. A PROSPECTIVE STUDY

Tony FAYAD, Fares HADDAD, Sarmah SASANKA

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Background: Femoroacetabular Impingement (FAI) is a well established condition that presents as hip and groin pain with restricted range of hip movements. The surgical approach in FAI aims to restore normal anatomy and biomechanics. In our study, all patients were dealt with using arthroscopic techniques. The aim of this study was to prospectively evaluate the clinical presentation, radiological investigation, treatment and functional outcome after hip arthroscopy surgery for patients presenting with FAI between 2006 and 2010. Materials and methods: 186 patients (136 male and 50 female) were included in this study and subjects were assessed pre- and postoperatively at 12 and 24 months. We assessed patients clinically using the nonarthritic hip score (NAHS), the UCLA activity score and the VAS pain score. The mean age of the patients was 31.7 years. Seven patients were lost to follow up, leaving 179 patients with a mean follow up of 23.2 months (range 17.6-25.7 months). Results: At the first follow up (12 months), the mean NAHS score increased by 14.8 points, the UCLA activity score increased by 1.8 points and the VAS pain score decreased by 2.1 points. At the 24 months follow up, the mean NAHS score increased by 22.6 points, the UCLA activity score increased by 2.7 points and the VAS pain score decreased by 2.8 points. Conclusion: Hip arthroscopic surgery is a safe and effective procedure for younger patients suffering from FAI. Our study has shown good results with considerable improvement in the functional outcome at 2 year follow up.

Date: 2012-11-29
Session: Research: Biomaterials IV
Time: 17:00 - 18:30
Room: Rashid D

Abstract no.: 32776

ERYTHROPOIETIN DIRECTLY STIMULATES OSTEOGENESIS

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Introduction: Erythropoietin (EPO) is an erythropoiesis-stimulating agent. Beyond this well-known role EPO has shown to increase bone formation in several animal studies. However, its way of osteogenic action is yet unknown. Both direct and indirect mechanisms have been proposed. In the present study the hypothesis was a direct stimulation of proliferation and osteogenic differentiation of mesenchymal stem cells (MSC). Methods: 13500 cells/cm² human MSC were seeded into 96-well plates using osteogenic medium. After 24 hours adhesion period the medium was replaced and different concentrations of EPO were added. Proliferation was assessed with cell proliferation kit (XTT) and osteogenic differentiation with alkaline phosphatase assay (ALP) at 2 and 7 days after treatment. Results: EPO significantly increased XTT levels at 2 days ($p < 0.007$) and ALP concentrations at 2 and 7 days ($p < 0.05$ and $p < 0.01$ respectively). EPO enhanced proliferation rate and osteogenic differentiation in a dose-dependent manner. Discussion: This study shows that EPO directly stimulates proliferation and osteogenic differentiation of primary hMSC in an osteogenic environment. In an earlier study we have shown, that EPO also increases bone formation and angiogenesis. Therefore, there is growing evidence supporting the theory that EPO exhibits both a direct and indirect way of osteogenic action. EPO may be a promising growth factor in the field of orthopedics and its efficacy as an osteogenic agent will be extensively investigated.

Date: 2012-11-29

Session: Research: Biomaterials IV

Time: 17:00 - 18:30

Room: Rashid D

Abstract no.: 32748

CORRELATION OF THE LEVEL OF THE PROTEASES GENE EXPRESSION BETWEEN THE SERUM AND SYNOVIUM.

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Introduction: Osteoarthritis of the joints is the most common seen disease in the western civilization. Recent papers show that one of the main destructive factors which caused osteoarthritis are matrix proteases which are produced by synovial and cartilage cells. Aim of the study: To establish the correlation of gene expression of some proteases between serum and synovium. Material and methods: This study included 138 patients, mean age of 37,8 years. All of them had 2,6ml full blood samples taken preoperatively and synovial membrane samples taken during the surgery. RNA was isolated and real time PCR with spectrophotometric analysis was performed. The expression of MMP 1, 2, 8, 9, 13, 14, aggrecanases 1,2, TIMP 1 and 2 genes were measured. Results: The Spearman's rank correlation test was used. All measured correlations have reached the significance level – $p < 0,05$. The statistical analyses showed the strong and positive relationship between each of the measured proteases. The strongest correlation was found for aggrecanase 1 $R=0,86$ and the weakest for MMP $R=0,44$. We observed that only the genes expression level for MMP 13, 14 and TIMP-1 from synovium and MMP – 8 , 14 and TIMP-1 do not correlate with the level of cartilage degeneration. We noted also that there is a significantly higher expression of protease genes for people with ruptured ACL. Conclusions: The strong correlation between enzymes changes in synovium and systemic blood may suggest that osteoarthritis is a general disorder. We observed that the more joint elements are destroyed the higher proteases expression occurred.

Date: 2012-11-29

Session: Research: Biomaterials IV

Time: 17:00 - 18:30

Room: Rashid D

Abstract no.: 32489

GUIDED STRETCHING PROGRAM IN THE TREATMENT OF PLANTAR FASCIOPATHY – GOOD RESULTS IN THREE YEAR FOLLOW UP

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Background: Plantar fasciopathy (PFP) is the most common cause of foot pain. Both conservative and operative treatment modalities are used, but the efficacy of different treatments has been controversial in the literature. Plantar fascia stretching program described by DiGiovanni et al. was described to give relief of pain for 90 % of patients. The aim of this study was to evaluate the result of stretching program in plantar fasciopathy patients. Methods: 19 consecutive PFP patients were recruited for this study. The patients were instructed by physiotherapist to follow previously published stretching program. Heel pain was evaluated by the patients using numeric rating scale (NRS - numeric value 0–10) at the first visit (n=19), three months control and at mean 18 months (n=16) after the initiation of the stretching program. Results: Mean NRS for the heel pain decreased from 5.7 to 1.5 at mean 18 months ($p < 0.01$). Also, the worst daily pain, pain during daily activities, nocturnal pain, and pain induced by stretching decreased during the follow-up. Conclusions: The stretching program is simple, safe and well accepted by the PFP patients. Guiding these patients to a stretching program is an efficient option to treat PFP.

Date: 2012-11-29

Session: Research: Biomaterials IV

Time: 17:00 - 18:30

Room: Rashid D

Abstract no.: 32020

CARPAL TUNNEL SYNDROME: AN EMERGING PUBLIC HEALTH PROBLEM AMONG MEDICAL COLLEGE STUDENTS AT MUST UNIVERSITY IN EGYPT

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Introduction: Carpal tunnel syndrome is a social condition associated with mechanical risk factors. It is a compression neuropathy of median nerve when passing through the carpal tunnel. Overall prevalence (3.0%-50.8%) among women and (0.6%-20.1%) has been found in general population sample (Jane et al., 2008). Recently, the extensive use of computers among young people has its menacing side, an example of which is the predisposition to many musculoskeletal disorders among which CTS. Objective: To describe the epidemiologic profile of CTS among college students. Subjects and method: A total of 250 college students participated in the present study and were asked to fill an anonymous questionnaire addressing socio-demographic topics and pattern of use of computers as risk factors for development of CTS. Students were evaluated for suggestive presence of CTS using two tests: Tinel and Phalen tests. Obtained data was analysed using appropriate tests in SPSS program for windows. Results: The studied students were: 177 (70.8%) male and 73 (29.2%) female, with mean age: 22.18 ± 1.81 years. Ninety two (37.7%) students were smokers, 163 (66.3%) used computer for 2-5 hours per day and 123 (50%) used to take frequent breaks. 208 (83.9%) of students did not show symptoms or signs suggestive of presence of CTS, meanwhile, positive Tinel test (n=70) out of 250 in the present sample was higher in male gender (n=61, 87.1%) than female gender (n=9, 12.9%) with statistically significant difference ($p < 0.05$).

Date: 2012-11-29

Session: Research: Biomaterials IV

Time: 17:00 - 18:30

Room: Rashid D

Abstract no.: 31693

NATURAL HYDROXYAPATITE COMPARE WITH SYNTHETIC HYDROXYAPATITE FOR BONE HEALING: HISTOLOGICAL, RADIOLOGICAL AND BIOMECHANICAL EVALUATION

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Introduction: Synthetic hydroxyapatite has been widely used in repair of hard tissues, and common uses include bone repair, bone augmentation, as well as coating of implants or acting as fillers in bone or teeth. In this study we compare synthetic hydroxyapatite with natural hydroxyapatite, produced from bovine bone, in vivo. Materials and methods: Natural hydroxyapatite powder was prepared by burning bone and heat treating the bone ash in an air furnace. The black ash was converted to a white powder after heat treatment. X-ray diffraction analysis and Fourier transform infra-red spectroscopy indicated that the white powder was hydroxyapatite and did not contain any organic components of the bone. X-ray fluorescence analyses revealed that calcium and phosphorous were the main elements and magnesium and sodium were present as minor impurities. In this experiment, twenty adult male New Zealand Albino rabbits were divided into 2 equal groups. They created defect in radial bone to compare these two kinds of hydroxyapatite in vivo. Radiographic evaluation performed every 3 weeks, nine weeks after operation the rabbits were euthanized pharmacologically for biomechanical and histopathological evaluation. Results: Microscopically, new bone formation was observed in all animals. In all animals radiological evaluations showed the defect was filled with woven bone and fibrous tissue. Generally, the histological sections and biomechanical tests showed same results. In conclusion: The bone mineral idealized on calcium hydroxyapatite is a carbonated hydroxyapatite which can be potentially functional for regeneration of hard tissue in tissue engineering.

Date: 2012-11-29

Session: Research: Biomaterials IV

Time: 17:00 - 18:30

Room: Rashid D

Abstract no.: 31687

**FREE MESENCHYMAL STEM CELLS SCAFFOLD FOR BONE HEALING:
HISTOLOGICAL, RADIOLOGICAL AND BIOMECHANICAL EVALUATION**

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Introduction: Increasing incidence of fractures and the slow repairing process especially in nonunion and delay union fractures has led to focus on the potential of stem cells as a novel strategy for bone repair. **Materials and methods:** In this experiment, twenty adult male New Zealand Albino rabbits were divided into 2 equal groups. An incision was made by osteotome on the middle portion of each radius at least twice as long as the diameter of the diaphysis for creation nonunion model in all animals. In first group, the created defects were filled with free mesenchymal stem cells scaffold obtained from subcutaneous fat by direct injection. In second group defects remained as control without any treatment. Radiographic evaluation performed every 3 weeks, nine weeks after operation the rabbits were euthanized pharmacologically for biomechanical and histopathological evaluation. **Results:** In all animals radiological evaluation showed the defect was filled with woven bone and fibrous tissue, but remodeling of the newly formed woven bone into lamellar bone was present in treated groups. Generally, the histological sections revealed that in defects treated with mesenchymal stem cells, the amount of newly formed bone was larger and fibrous tissue formation was less than in defects in control group. The results of biomechanical load test showed treated group significantly better than control group. In conclusion, subcutaneous fat derived mesenchymal stem cells could be the promising cell sources for the treatment of nonunion fractures.

Date: 2012-11-29

Session: 16 - Symposium - Trauma: Natural Disaster Triage

Time: 10:30 - 12:00

Room: Dubai A+B

Abstract no.: 33444

**MEDICAL RESPONSE FOR 2011 GREAT EAST JAPAN EARTHQUAKE
AND TSUNAMI**

Masateru SHINDO

., . (JAPAN)

Date: 2012-11-29

Session: Trauma: Road Trauma Safety

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 31203

ALCOHOL INTOXICATION IN ROAD TRAFFIC ACCIDENTS LEADS TO HIGHER IMPACT SPEED DIFFERENCE, HIGHER ISS AND MAIS, AND HIGHER PRECLINICAL MORTALITY

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Introduction: Alcohol use has been well established as one of the most important personal risk factor for serious and fatal injuries, contributing to approximately one third of all deaths from accidents. Prevalence of alcohol intoxication in trauma patients is ranging from 18% to 80% in literature depending on study design and inclusion criteria. We hypothesized that alcohol-intoxicated trauma patients show different accident mechanisms and different injury patterns and severity compared to patients with negative blood alcohol levels. Methods: The accident research unit analyses technical and medical data collected shortly after the accident at scene. Blood alcohol concentrations (BAC) were measured. In order to determine the influences type of collision, direction and speed as well as the injury pattern and different injury scores (AIS, MAIS, ISS) were examined. Results: 37635 motor vehicle crashes were evaluated. 2.34% of all injured patients were killed, 2.24% of the BAC negative patients and 4.61% of the BAC positive patient group ($p < 0.0001$). BAC had a mean ISS of 5.96 ± 9.56 , while patients with a negative or not tested BAC had a medium ISS of 3.73 ± 7.85 ($p < 0.001$). Overall MAIS was 1.40 ± 0.87 , with 1.71 ± 1.08 for BAC positive patients and 1.39 ± 0.86 in the BAC negative group ($p < 0.001$). Alcohol intoxication in trauma patients leads to higher relative speed on impact, higher injury severity, and finally to higher pre-clinical mortality. The subgroup analysis showed no alcohol dose related effect on injury severity and relative speed, but a correlation of increasing age of patients age with higher alcohol concentrations.

Date: 2012-11-29

Session: Trauma: Road Trauma Safety

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 31998

UTILITY OF TECHNICAL CRASH PARAMETERS IN PREDICTING INJURY SEVERITY

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²Unfallkrankenhaus Berlin, Berlin (GERMANY)

Background: Technical parameters of road traffic crashes are routinely documented by emergency physicians on scene. It remains unclear whether this information contributes to the estimation of injury severity of vehicle drivers. Materials and Methods: In this study, three experienced emergency physicians were asked to predict the injury severity of vehicle drivers (categorized according to Injury Severity Score [ISS] values of <16 and ≥16 as moderate to severe or life-threatening) based on increasingly complex technical crash information, ranging from routine variables to photo-documentation of the crash scene. A sample of 100 cases (mean ISS 23.6±26.9) was obtained from the prospective database of an in-depth technical and medical car crash research project. Statistical analysis comprised inter-rater agreement beyond chance (kappa values) and indicators of diagnostic test accuracy. Results: The inter-rater agreement of injury severity based on technical crash information was moderate to substantial (kappa 0.42 to 0.66). Amongst the three observers and various amounts of technical data, sensitivity ranged between 18 and 80%, and specificity ranged between 41 and 89% in predicting the presence of major trauma. Presentation of photographs from the crash scene increased diagnostic accuracy. Still, the presented information led to a shift from a 50% prior probability of life-threatening injuries to a maximum of 40% in the negative and 67% in the positive case. Conclusion: Neither basic technical parameters that are easy to obtain after a car crash nor additional technical information markedly contribute to the emergency physician's estimation of a vehicle driver's injury severity.

Date: 2012-11-29

Session: Trauma: Road Trauma Safety

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 31715

USE OF SEAT BELTS VERSUS INJURY PATTERN: A CASE REPORT OF PAEDIATRIC CAR OCCUPANTS INVOLVED IN AN ACCIDENT

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Correct use of seatbelts in road traffic accidents saves lives and reduces the risk of sustaining severe injuries. Non-compliance leads to an increased hospital stay, adds preventable costs to the health system and leads to loss of periods of productive life. Pelvic injuries are a major cause of morbidity and mortality in motor traffic accidents. Very little research has focused on the kinematics of injury in rear seat occupants. We report four minors between the ages of 10 and 14 years old and of similar physical structure, driven by a 10 year old involved in a head on road traffic accident. Pelvic injuries were sustained by the only unrestrained rear seat passenger. We conclude from this case report that the severity of pelvic injuries has direct correlation with seatbelt application and its importance in preventing potentially life threatening pelvic injuries. While it is unethical to conduct a study in live car occupants involved in a motor vehicle accident, we believe this case imitates a study elaborating the importance of seatbelts in relation to pelvic and lower extremity injuries.

Date: 2012-11-29

Session: Trauma: Road Trauma Safety

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 33030

TREATMENT OF POSTTRAUMATIC STERNAL NON-UNION WITH A LOCKED STERNUM-OSTEOSYNTHESIS

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INTRODUCTION: Only a minority of sternal fractures require osteosynthesis. Unstable non-union of the sternum is a very disabling condition which often requires treatment. **OBJECTIVES:** to analyze how stable is the osteosynthesis of sternal nonunion using the angular stability locking systems. **METHODS:** The method most often used is tension-wiring. Due to loosening of the tensile strength or wire cut-out, this method often fails. We report the results of locked plate osteosynthesis of sternal non-union and displaced fractures. **RESULTS:** Over a five-year period, 12 patients have been treated using this method in a multicentre trial. Mean age at trauma was 32.8 years, the implant used in all cases was an 8-hole titanium plate, the fixation of the screws is based on the principles of angular stable fixation. In all cases the index procedure was possible, in all cases there was bony healing at follow-up examination. **CONCLUSION:** Multidirectional locked plating offers a reliable method for the successful treatment of sternal nonunion and displaced fractures.

Date: 2012-11-29

Session: Trauma: Road Trauma Safety

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 31250

MUSCULOSKELETAL INJURIES OF CHILDREN RIDING DIRT BIKES.

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Background: Dirt bike riding is becoming a more popular recreational activity among children. Injuries associated with this recreational activity did not gain attention in the medical literature. Purpose of the study: To assess the musculoskeletal injuries in children riding dirt bikes. Methods: We retrospectively studied injuries occurring in children less than 18 years old while riding dirt bikes who required admission to the trauma department in our level one trauma center during the period from 2000-2010. Results: There were 24 admissions (23 patients). The mean age was 13 years old. Fourteen patients had brain injuries. Six patients had abdominal injuries. One patient died shortly after arriving to the emergency department. Fourteen patients had face and neck injuries. The average injury severity score was 8.5. Thirteen patients' admissions (54%) had orthopedic fractures. Five of 13 patients (38%) suffered more than one fracture. Eight patients needed orthopedic intervention (seven of these was in operating room under general anesthesia and one in the emergency department under conscious sedation). Femur fracture was the most common cause to perform surgery in this group of patients. Conclusion: Riding dirt bikes is not a safe recreational activity. Orthopedic injuries constitute a major component of the injuries affecting children riding dirt bikes. Orthopedic surgeons (being responsible to treat most of these children) have the obligation to warn the community against the possible dangers facing children who ride dirt bikes.

Date: 2012-11-29

Session: Trauma: Road Trauma Safety

Time: 17:00 - 18:30

Room: Dubai A+B

Abstract no.: 31545

TREATMENT OF POSTERIOR PELVIC RING INJURIES WITH MINIMALLY INVASIVE OSTEOSYNTHESIS

Nurlan BATPENOV, Shalginbay BAIMAGAMBETOV, Birzhan DOSMAILOV, Nagmet MURSALOV

Traumatology and Orthopedy Research Institute of the Ministry of Health, Astana (KAZAKHSTAN)

Pelvis injuries are one of the most pressing problems in traumatology and compose 3% - 10% of all bone fractures. Objective: To study the results of treatment of unstable pelvic injuries using the mini-invasive technology. Materials and methods: 16 patients with unstable injuries of pelvis were treated at Research Institute of TO in Astana, Kazakhstan from 2007 to 2010. There were 12 men and 4 women. Age of patients varied from 19 to 43 years with a mean age of 31.6 years old. 10 patients sustained injury in road traffic accidents. 6 patients got trauma as a result of fall from height. In this paper we used the classification of AO-Tile. Injuries of type B were noted in 12 cases, and injuries of type C in 4 cases. Treatment outcomes were assessed under scale of S.A. Majeed after 12 months. Results and discussion: Excellent results were obtained in 14 (87.58%) patients, bad results in 2. In pelvic fractures of type B all patients achieved reposition of bone fragments. The displacement of bone fragments in pelvis injuries of type C was corrected in 2 cases. 2 patients with type C fracture developed displacement more than 1 cm, which led to bad result in long run. In two cases the ventral perforation of screw from the sacrum occurred, but there were no clinical symptoms. Conclusions: Minimally invasive osteosynthesis is one of the minimal traumatic methods of fixation of pelvis fractures. Minimally invasive osteosynthesis of pelvis injuries enables a stable fixation of bone fragments.

Date: 2012-11-29

Session: 06 - ICL - Foot & Ankle: Ankle Arthroscopy

Time: 08:30 - 10:00

Room: Dubai C+D

Abstract no.: 33435

**ANKLE ARTHROSCOPY: INDICATIONS, SET-UP, TECHNIQUES,
PITFALLS & PEARLS**

C.N VAN DIJK

., . (NETHERLANDS)

Date: 2012-11-29

Session: 06 - ICL - Foot & Ankle: Ankle Arthroscopy

Time: 08:30 - 10:00

Room: Dubai C+D

Abstract no.: 33436

**HINDFOOT ARTHROSCOPY: INDICATIONS, SET-UP, TECHNIQUES,
PITFALLS & PEARLS**

Jorge BATISTA

., . (ARGENTINA)

Date: 2012-11-29

Session: 06 - ICL - Foot & Ankle: Ankle Arthroscopy

Time: 08:30 - 10:00

Room: Dubai C+D

Abstract no.: 33437

TENDOSCOPY: INDICATIONS, SET-UP, TECHNIQUES, PITFALLS & PEARLS

T.H LUI

., . (HONG KONG)

Date: 2012-11-29
Session: Trauma: Humerus
Time: 10:30 - 12:00
Room: Dubai C+D

Abstract no.: 31946

TREATMENT OF HUMERAL NECK FRACTURES. ALEXANDRE BELETSKY, VLADIMIR GERASIMCHIK, SERGEY ZALEPUGIN. REPUBLIC SCIENTIFIC PRACTICAL CENTER OF TRAUMATOLOGY AND ORTHOPEDICS.

Alexandre BELETSKY

Republic Scientific practical Center of Traumatology and Orthopedics, Minsk (BELARUS)

In our study we used the method of closed osteosynthesis in cases of humeral neck fractures. For this purpose we used 2-3 Ilizarov wires. After closed reduction of fragments, wires were inserted erectly through acromion in humeral head, and further – in humeral shaft. In some cases wires were inserted with deviation from vertical axis of humerus. Thus we achieved more stable fixation of fragments, because wires passed through humeral cortex. Humerus was additionally immobilized by plaster bandage for 4 weeks. We traced follow-up results of 150 patients, who have been treated by this method in our clinic during the period from 2006 to 2011 years. We didn't observe any cases of non-union, resorption of humeral head, wire-tract osteomyelitis or fragment displacement – complications, that frequently accompany other methods of treatment. The function of humeral joint totally restored; all patients of manual labour didn't loose capacity for work; no cosmetic defects were observed. Taking all this facts into consideration, we recommend our method as effective in cases of fractures of humeral neck with dislocation of fragments.

Date: 2012-11-29
Session: Trauma: Humerus
Time: 10:30 - 12:00
Room: Dubai C+D

Abstract no.: 30766

RESULTS OF DISTAL THIRD FRACTURES OF HUMERUS TREATED WITH RETROGRADE HALDER HUMERAL NAIL

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INTRODUCTION: Treatment for distal third shaft fractures of humerus is very challenging especially with osteopenic bone. We report our case series of distal third humeral fractures treated with retrograde Halder Humeral Nail. **METHODS:** Since 1994 to 2010 we had 576 fractures of humerus treated with retrograde Halder Humeral nail. Of these 45 fractures were involving distal third of humerus (extra articular). Average age of patient was 30.4 years (Range 15-82 years, Median 33 years). 3 out of 45 patients had non union at the time of presentation which were either treated non operatively or with other implant. The design of nail allows it to be used for very distal fractures. All fractures were fixed with a distally with a locking screw and proximally with a tri wire and a locking screw. Patients were mobilised actively at 2 weeks. All patients were followed till clinical and radiological signs of union. 1 patient was lost to follow-up. **RESULTS:** Average time to fracture healing was 13.9 weeks (Range 9-36weeks). There were 2 cases of non union, one healed at 9 months with 2nd surgery. The other patient had asymptomatic non union. There was one reported case of infection which got cured after removal of implant. All the patients achieved full range of elbow and shoulder movement. No reported cases of iatrogenic radial nerve palsy. **CONCLUSION:** Our results retrograde Halder Humeral Nail for distal humeral fractures are excellent. It avoids big exposure with reduced risk of iatrogenic radial nerve palsy.

Date: 2012-11-29

Session: Trauma: Humerus

Time: 10:30 - 12:00

Room: Dubai C+D

Abstract no.: 31882

WHY ONE SHOULD DO A DOME OSTEOTOMY FOR POST TRAUMATIC CUBITUS VARUS..?

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INTRODUCTION: Cubitus varus is most common long-term complication resulting from a malunion of a supracondylar fracture of the humerus in children. Various modalities of treatment have been described in literature like lateral closing wedge osteotomy, French osteotomy and step cut osteotomy. Each osteotomy has its own limitations. We have reviewed the dome osteotomy and results compared with the rest. **MATERIAL AND METHODS:**In the period 2004 to 2012, we have treated 50 patients, of whom 23 were male and 27 female, 14 patients being skeletally mature and 36 patients skeletally immature. Dome osteotomy was performed to correct the deformity and internally fixed in the form of k-wires or plate. The average follow-up period was 2.1 years (1–4 years). Objective assessment humerus-elbow-wrist angles, lateral prominence index, carrying angle and range of elbow motion. Outcome was assessed with Mayo elbow score. **RESULTS:** 50 patients 28 had excellent, 12 had good, and 4 had poor outcome. Average union was 5.3 wks with no case of non-union. Average improvement in the carrying angle 25.2 degrees and in lateral prominence index was 11%. Residual varus of more than 10 degree of normal was seen in 4 cases. All patients had desired range of motion. **CONCLUSION:** Dome osteotomy has its own advantages like being inherently stable, achieves better correction, avoids having the lateral condyle becoming prominent; and the posterior scar is more cosmetically acceptable and in some respects a better treatment option for post traumatic cubitus varus.

Date: 2012-11-29
Session: Trauma: Humerus
Time: 10:30 - 12:00
Room: Dubai C+D

Abstract no.: 32250

EVALUATION OF THE MANAGEMENT OF PROXIMAL HUMERAL FRACTURES BY VARIOUS MODALITIES

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Introduction: Proximal humeral fractures are one of the commonest fracture encountered in emergency centres. Management of complex fractures are still challenging. We have evaluated the efficacy of various methods used for the fixation of fracture proximal end humerus. Method & Materials: Forty seven cases with proximal end humeral fractures were taken in our study and classified as per Neer's classification. Out of 47, 14 have been classified into 2 part fracture, 17 into 3 part fracture, 13 into 4 part fracture and 3 with fracture dislocation. All patients are treated surgically depending upon fracture geometry and quality of bone with various modalities viz. Proximal humeral Nailing, CR & percutaneous pins/screws, JESS, Proximal Locking plate and Hemireplacment Arthroplasty. These patients were evaluated for their functional outcomes by Swanson Shoulder score. Mean duration of follow-up was 19 months. Results: All patients showed fair to good result except four patient presented with malunion, two patients with non union and one with AVN. There was no incidence of deep infection and nerve injury. Patients presenting with non union and AVN were treated later by Hemi replacement arthroplasty. Conclusion: Proximal humeral fractures can be treated successfully by various modalities depending upon fracture pattern, quality of bone and individual surgeons experience and expertise.

Date: 2012-11-29
Session: Trauma: Humerus
Time: 10:30 - 12:00
Room: Dubai C+D

Abstract no.: 32248

MANAGEMENT OF NONUNION OF SHAFT HUMERUS: PLATING, ILLIZAROV RING FIXATOR AND FIBULAR STRUT GRAFT.

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INTRODUCTION: When non-union of shaft humerus does occur, it is likely to be related to the severity of the initial injury, the transverse pattern of the fracture, distraction of the fracture, soft-tissue interposition, bone loss at time of injury or inadequate immobilization. We have studied the different modalities of treatment like plating, illizarov ring fixator and use of fibular strut graft. **METHODS:** In a prospective study of 40 cases in period of 2006 to 2012, mean age being 32yrs (23 to 71), with average period of non-union being 11 months. Preop infection present in 7 cases which was treated with ring fixator, 5 cases were treated with fibular strut graft which had bone loss pre-operatively and 24 cases treated with plating and morcellized cancellous bone graft. Outcome was assessed with DASH score. **RESULTS:** Union was achieved in 39 cases with average union time 5.5 months, 1 case had persistent non-union with infection. Average Union time in cases having previous infection was 10month after the final procedure and 8 months where fibular strut graft was used along with plating. Mean Preoperative DASH score 49.48 and post op was 15.33 9 ($p < 0.05$). **CONCLUSIONS:** Various modalities are available for non-union of shaft humerus like plating, ring fixator and fibular strut graft with its own limitations and advantages. Choice is made depending on the fracture anatomy and cause of non-union.

Date: 2012-11-29
Session: Trauma: Humerus
Time: 10:30 - 12:00
Room: Dubai C+D

Abstract no.: 30730

**ANTEGRADE INTERLOCKING NAILING VERSUS LOCKING
COMPRESSION PLATING FOR TREATMENT OF HUMERAL SHAFT
FRACTURES**

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Aim: To evaluate and compare the results of 2nd generation antegrade interlocking nailing (ILN) and locking compression plating (LCP) in humeral shaft fractures. **Material & Methods:** During 8 years period 132 patients (84 males and 48 females) were operated and followed up for 12 – 60 months. In 77 fractures ILN was performed and LCP in rest 55. According to AO there were 28 vs. 20 Type A, 29 vs. 25 Type B and 19 vs. 11 Type C fractures. **Results:** The mean operative time was 80 min for ILN vs. 120 min for LCP. Healing occurred in 127 fractures with mean healing time 93 vs./ 115 days. Functional results according to Constant-Murley score and Mayo Elbow score were as follows. Shoulder: excellent 41 (54%) vs. 41 (75%), good 21 (27%) vs. 10 (18%), satisfactory 11(14%) vs. 1 (2%) and poor 4 (5%) vs. 3 (5%). Elbow: excellent 74 (96%) vs. 44 (79%), good 3 (4%) vs. 11 (21%). Complications noted were iatrogenic nerve palsy 1 (1.3%) vs. 3 (5.4 %), delayed union 2 (2.6 %) vs. 2 (3.6%), non-union 2 (2.6%) vs. 3 (5.4%), infection 1 (1.3%) vs. 1 (1.8%), fixation failure and reosteosynthesis 2 (2.6%) vs. 3 (5.4%), shoulder impingement 13 (17%) vs. 2 (3.6%). **Conclusions:** Antegrade interlocking nailing injuries shoulder function and should be using only in pitients with polytrauma and C type fractures. Plating is better option for treatment of HSF in patients with A type and B type HSF according to AO, with low rate of complications.

Date: 2012-11-29
Session: Trauma: Humerus
Time: 10:30 - 12:00
Room: Dubai C+D

Abstract no.: 32924

DCP VS LOCKED INTRAMEDULLARY NAILING FOR HUMERAL SHAFT FRACTURES

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Objectives: To compare functional outcomes, union and complication rates in patients treated with locked intramedullary nailing or dynamic compression plating for humeral shaft fractures. **Methods:** The study included 30 patients (25 males, 5 females; mean age 37.3 years; range 18 to 72 years) with closed humerus shaft fractures. Fifteen patients were treated with intramedullary nails and 15 with dynamic compression plates. Functional results were evaluated according to the Stewart and Hundley's criteria and results were compared. The mean follow-up period was 42 weeks (range 24 to 72 weeks). **Results:** In the IMN group, 4 patients (26.67%) had excellent results whereas failure was seen in 2 patients (13.33%). 9 patients (60%) in the DCP group had excellent results and failure was seen in 1 patient (6.67%). Average time taken for union was less for DCP group (16.43 weeks) as compared to IMN group where it was 18.08 weeks. The overall complication rate (infection, joint stiffness, iatrogenic radial nerve palsy) was 46.67% and 13.33% in IMN and DCP groups respectively. The most common complication in both the groups was joint stiffness. Interlock nailing patients had a much higher percentage of joint stiffness as compared to plating group. 53% patients were pain free in interlock nailing group as compared to 93% in plating group. **Conclusion:** The incidence of nonunion, pain, complication rate was higher in the IMN group, whereas functional outcomes were significantly better with plating group. DCP continues to be the treatment of choice for closed diaphyseal fractures of humerus.

Date: 2012-11-29

Session: Trauma: Humerus

Time: 10:30 - 12:00

Room: Dubai C+D

Abstract no.: 32436

**OSTEOSYNTHESIS WITH PLATE VERSUS CENTROMEDULLARY NAIL
IN FRACTURES OF THE DISTAL THIRD OF HUMERAL DIAPHYSIS**

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Aim: To compare the clinical results of osteosynthesis with plate and screws versus anterograde locked intramedullary nail in fractures of the distal third of humeral diaphysis. **Material and methods:** 184 patients with fractures of the distal third of humeral diaphysis were included in a prospective study. 82 patients underwent open reduction and internal fixation with plate and screws (Group 1), while in 102 cases, closed reduction and osteosynthesis with locked intramedullary nail was performed (Group 2). The 2 groups were similar in terms of age and gender distribution and pattern of fractures. The function of shoulder and elbow were assessed using the Oxford Shoulder Score (OSS) and Oxford Elbow Score (OES). Operating time, duration of hospital stay, complications and moment of union were recorded. **Results:** At 6 months after surgery the average OSS was 44,42 in Group 1 and 40,23 in Group II, while the mean OES was 40,88 in Group 1 and 46,54 in Group 2. The average duration of the surgical procedure was 87 min in Group 1 and 43 min in the nail group ($p < 0,001$). The mean duration of hospital stay was 2,6 days in Group 1 and 1,8 days in Group 2 ($p < 0,05$). The rate of nonunions was 3,66% in the plate group and 2,94% in the retrograde nail group ($p > 0,05$). **Conclusions:** The clinical results of the 2 methods of osteosynthesis were similar, but the operating time and the duration of hospital stay were longer after plate osteosynthesis. Shoulder function was slightly impaired in the nail group but not statistically significant.

Date: 2012-11-29

Session: Trauma: Humerus

Time: 10:30 - 12:00

Room: Dubai C+D

Abstract no.: 32666

**INTERNAL FIXATION OF FRACTURE SHAFT OF HUMERUS:
COMPARISON OF LOCKING COMPRESSION AND LIMITED CONTACT
DYNAMIC COMPRESSION PLATE**

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Methods: It is a prospective randomised comparative study which was carried out from October 2008 to September 2011. In this study period 40 cases of fracture shaft of the humerus were treated by open reduction and internal fixation using LCP & LC-DCP (20 cases in each group). Patients were randomly assigned to either of the two groups after block randomization with a random number table. LCP (with combihole) & LCDCP (4.5mm system) of 6, 7 & 8 holed plates were used. **Results:** The mean time of union for the humerus fixed with LCP was found to be 14.16 weeks (range 8-21 weeks) in comparison to 16.27 weeks (range 10-26 weeks) for the LC-DCP group. (P=0.63, unpaired t test). **Conclusion:** LC plating is an effective treatment option for fractures shaft of humerus. The present study could not prove the superiority of LCP over LC-DCP. It is the proper application of the principles of plating and not the type of plate which decides the outcome.

Date: 2012-11-29
Session: Trauma: Humerus
Time: 10:30 - 12:00
Room: Dubai C+D

Abstract no.: 32827

A COMPARISON OF INTER AND INTRA-OBSERVER RELIABILITY FOR CLASSIFICATION OF PROXIMAL HUMERUS FRACTURES BY DIFFERENT RADIOLOGICAL IMAGINGS.

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Objective: The purpose of this study was to determine whether three-dimensional reconstructed computed tomography (CT) images can improve intra-observer and inter-observer reliability for classification systems of proximal humerus fractures compared to plain radiographs and two-dimensional CT images. Methods: Ten orthopedic surgeons using the Neer classification independently classified a cohort of twenty patients with proximal humerus fracture. The inter-observer agreement was measured for classification of fractures and treatment by plain radiograph (scapular AP and lateral), CT scan, and 3D CT reconstruction. The intra-observer and inter-observer reliability were assessed using kappa statistics. Results: For overall classification 3D reconstruction and 2D CT scan both had significantly higher agreement on classification than x-ray; however the agreement on treatment was best with 3D CT reconstruction scans. Conclusion: Three-dimensional CT reconstruction is a more reliable radiographic modality than 2D CT in evaluation of proximal humeral fracture patterns. Our findings support the use of modern imaging modalities for the diagnosis of complex intra and peri-articular fracture patterns for more reliable classification.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Dislocation & Fracture Treatment

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 30932

THR IN HIGH HIP DISLOCATION

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Introduction: Successful endoprosthetic replacement in secondary osteoarthritis resulting from high hip dislocation (HHD) is demanding and has to address all pathological anatomical aspects of this disease. In most cases a derotating and shortening osteotomy is required to achieve a satisfying biomechanical situation of the hip. Methods: In a prospective study, 30 patients with HHD were treated with a subtrochanteric derotating and shortening osteotomy. Sufficient stability without additional osteosynthesis could be achieved by intramedullary fixation of the osteotomy through a cementless straight tapered stem (Zweymüller). Results: At a mean follow-up of 5.1 years (± 4.1 years), the patients were evaluated both clinically and radiographically. One aseptic cup loosening and one stem migration were observed. All osteotomies had achieved primary healing, as determined radiographically, after a mean consolidation time of 4.4 months. The mean HHS at the time of follow-up was 78. No postoperative dislocation and no neuropraxia of any nerve were observed. Conclusion: We conclude that press fit fixation of a cementless cross sectional rectangular stem into an oval shaped femur results in adequate primary rotational stability. From a biological viewpoint, the periosteal microcirculation near the osteotomy might also be less disturbed by a solely intramedullary fixation through the stem than by any additional extramedullary osteosynthesis. In summary, the subtrochanteric osteotomy without additional osteosynthesis for treatment of HHD has shown equal or superior mid-term results (shorter operation time, shorter consolidation time, less complications) compared to other different techniques described in literature.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Dislocation & Fracture Treatment

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32160

**IMPACT ON HIP DISLOCATION RATES WITH LARGER HEAD BEARING
TOTAL HIP ARTHROPLASTY FOR NECK OF FEMUR FRACTURES**

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National Joint Registry for England and Wales has highlighted a statistically significant increase in the use of femoral heads ≥ 36 mm in diameter backed by reports showing enhanced stability. Aims: To determine if larger diameter heads influence dislocation rates and subsequent revision THA in patients with fracture NOF. Current literature suggests a high rate of revision THA in these patients and we aim to compare our results. Methods: Data was retrieved from the departmental arthroplasty database. Patients included were THA's done for fracture NOF with head size ≥ 36 mm. This series included surgeons with various levels of surgical experience reflective of a district general hospital. Follow-up information was obtained from patients by a specialist joint replacement nurse in a follow up clinic and by telephone conversation. Results: We performed 74 consecutive THA's, between January 2007 to September 2011 with ≥ 36 mm heads. 40% patients were operated by antero-lateral approach and 60% by posterior approach. Patients were followed up was for an average of 18 months (6-46months). There was one late dislocation with the antero-lateral approach after one year which needed revision surgery. Conclusion: Our study demonstrates a low rate of dislocation with the use of large femoral heads in THA for fracture neck of femur. We have not encountered any increase in dislocations with the use of the posterior approach in these group of patients. We have a limitation of reporting only these short term results but with continuing follow-up we will be reporting medium term results in the future.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Dislocation & Fracture Treatment

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 31581

DUAL ARTICULATION THA CUPS HAVE SIMILAR CLINICAL RESULTS AS CONVENTIONAL CUPS BUT REDUCE DISLOCATION RATES

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Introduction: Total hip arthroplasty after femoral neck fracture patients is associated with greater risk for prosthetic dislocation. Dual articulation systems in this group of patients provide better implant stability and reduce dislocation rate. However, the clinical results of dual articulation systems in femoral neck fracture patients have to our knowledge not been investigated. The aim of our study was to investigate FNF patients treated with dual articulation cups (DAC) and conventional THA and compare their clinical results at four months and one year after surgery. Methods: Our study compares femoral neck fracture patients treated with either DAC or conventional THA during two different time periods. Before surgery and during follow-up, the patients answered questions regarding their mobility, pain and usage of walking aids. Additionally at 4 months and one year follow-ups EQ-5D and HOOS questionnaires were applied for those patients qualifying for functional and quality of life analysis. Results: Out of 125 femoral neck fracture patients 58 were treated with DAC and 67 with conventional THA. At four months and one year follow up the HOOS and EQ-5D results did not differ significantly between DAC and conventional THA. 5 hips in the THA group were revised for recurrent dislocation and 2 had single dislocation. Conclusion: One year after surgery, the functional result of DAC and conventional THA are comparable but with the DAC having a less risk for dislocation.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Dislocation & Fracture Treatment

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32698

THE MID-TERM RESULTS OF PRIMARY THR DURING ACETABULAR FRACTURES

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Aim: To determine anatomical-functional results after primary THR during acetabular fractures. **Materials & methods:** Data of 35 patients with unilateral comminuted acetabular fractures who underwent primary THR were analyzed. Time interval of injury varied from 2 weeks to 2.5 years. Despite the variation in time interval of injury, radiological signs for consolidation of fracture were absent. Avascular necrosis of femoral head was observed in major cases (22/39). Impression of fracture fragments in the weight bearing area was noted in 17 patients. Indications for primary THR in these patients were: 1. Impossible anatomical reposition of acetabulum, 2. Presence of large impressed joint cartilage and 3. Malunited fracture which needs devitalization of fragments for reposition. Bone plates and armed constructions in various combinations are used with cemented fixation of acetabular components. **Results:** Replacement of Acetabular component was needed in 1 patient within the first year of surgery. During primary surgery, acetabular fractures are fixed only by armed constructions. The median functional results of other patients during the last follow-up (1-7 years) was 86.4 by Harris Scale. **Summary:** According to our 7 years follow-up, the primary THR during comminuted transacetabular fractures with >3 weeks duration, allows to decrease rehabilitation period significantly and increase the quality of life without the need of secondary surgery.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Dislocation & Fracture Treatment

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32505

CONVERSION OF FAILED OPERATED INTERTROCHANTERIC FRACTURES: HIP ARTHROPLASTY WITH DISTAL-FIXATION FEMORAL STEMS IN UNSALVAGEABLE FEMORAL HEADS. MID-TERM RESULTS IN 37 CASES

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Introduction: Failed operated intertrochanteric fractures (with DHS screw cut-out, joint penetration, varus collapse, non-union, or femoral head AVN) pose decision-making dilemmas and surgical challenges. Re-osteosynthesis with autologous bone grafting is ideal, but seldom feasible. When the femoral head is unsalvageable, conversion to a prosthetic hip is necessary. Methods: 37 patients with failed DHS fixation (and unsalvageable femoral heads) were treated with cementless hip arthroplasty (thirteen underwent Bipolar hemi-arthroplasty, 24 had Total Hip Arthroplasty) over 5-year period (Dec 2005 to Nov 2010). Seven needed a modified trochanteric split, the rest were operated by standard anterolateral approach. Abductor mechanism was reconstructed using strong nonabsorbable sutures (ethibond 5), or stainless steel wires. Post-operative rehabilitation was closely supervised, with tolerance weight bearing. Results: Clinico-radiological assessment was done at 3, 6, 12 months and yearly thereafter over an average 48 months (range, 12 to 72 months). Stem loosening, osteolysis, subsidence, and trochanteric union were specifically studied. At last follow-up, one patient had died, and there were two instances each of stem subsidence and trochanteric nonunion. Clinical results using Harris hip scores were good or excellent in 31 of the surviving 36 patients. Discussion: The distal-fixation femoral stem can be successfully used to bypass proximal femoral deficiency caused by previously operated fractures. Outcomes depend on functional abductor reconstruction, fracture prevention and judicious weight-bearing physiotherapy protocol. Autograft, allograft or head/neck replacement components are necessary sometimes.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Dislocation & Fracture Treatment

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 31527

**PRIMARY HEMIARTHROPLASTY IN OSTEOPOROTIC UNSTABLE
INTERTROCHANTERIC FRACTURES IN THE ELDERLY PATIENTS.**

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INTRODUCTION : The management of unstable intertrochanteric fractures among elderly is challenging because of difficult anatomical reduction , poor bone quality and protection of fracture from the stress of early weight bearing .Internal fixation in these patients involve prolonged bed rest and limited weight mobilisation to prevent implant failure .This might lead to complications like pulmonary embolism , DVT , pneumonia , pressure sores . The aim of this study is to evaluate the role of primary hemiarthroplasty in unstable osteoporotic intertrochanteric fracture . **MATERIALS & METHODS :** Prospective study involving 29 patients , operated with primary hemiarthroplasty for unstable osteoporotic inter trochanteric fracture (OTA -31-A2.2 , 31-A2.3) . There were 19 females and 10 males with mean age 73 yrs . **RESULTS :** 1 patient died of myocardial infraction within 3 months of surgery and remaining 28 patients were followed up for average period of 24 months(15-36 months) .The average surgery time was 80 mins , average blood loss was 300 ml , patient walked on average 4 days after surgery (3-8 days) avg hospital stay was 15 days . Out of 28 patients 26 had excellent to fair functional results ,one had poor result with respect to harris hip score and one refused to walk post operatively was considered as failed .**RESULT:** primary hemiarthroplasty in osteoporotic unstable intertrochanteric fractures results in early mobilisation and good functional result . Further randomised studies are required to establish the facts .

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Dislocation & Fracture Treatment

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 31586

HIP ARTHROPLASTY FOR SALVAGE OF FAILED INTERNAL FIXATION OF TROCHANTERIC HIP FRACTURES

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Hip arthroplasty after failed treatment of an intertrochanteric fracture in elderly patients is a technically challenging procedure. Methods: Between May 2009 and December 2011, a prospective study was undertaken including thirty-two patients (24 females and 8 males) with a mean age 66.9 years old (range; 50 - 90 years old). Two patients were lost in less than 3 months period and the remaining 30 patients were followed up for a mean of 14 months (range; 3 - 30 months) after surgery. All patients had a total hip arthroplasty. Cemented THA was used in 28 hips, cementless in 3 cases and reversed hybrid in one patient. A calcar replacement design or long-stem implant was used in 16 of the 32 hips. Results: At the time of the last follow-up, our mean Harris hip score has showed an improvement of 60.87 points (from 13.79 to 74.66). Pre-operatively Harris hip scored ranged from 1.1 to 43 and ranged post-operatively from 54 to 94 points. This wide variation was due to the different patients' demographics, levels of activities and associated medical co-morbidities. We found statistically significant relation between the patient age (p- value 0.001) and body mass index (p-value 0.00) and the outcome. No statistically significant relationship was found between the number of previous surgeries (p- value 0.57) and type of the original fracture (p- value 0.13) and the outcome.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Dislocation & Fracture Treatment

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 32486

**PRIMARY HEMIARTHROPLASTY FOR UNSTABLE
INTERTROCHANTERIC FRACTURE IN ELDERLY**

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Most stable intertrochanteric fractures can be treated successfully with internal fixation but dealing with unstable intertrochanteric fractures remains problematic. This study was undertaken to evaluate the clinical and radiological outcome following the use of modular cementless bipolar prosthesis for unstable intertrochanteric fracture in elderly patients. Fifty five patients of unstable intertrochanteric fractures (AO/OTA type 31-A2 & A3 and Evans type III or IV fractures) were treated with hemiarthroplasty from January 2004 to December 2008. Forty-seven patients were available for review at the latest follow-up. Data was collected from in-patient hospital files and out-patient department follow up records. There were 35 females and 20 males with mean age of 72 years (range 65-82 years). The mean follow up is 4 years (range 3-7.5 years). The average duration of surgery was 50 min (range 35min-90min), average blood loss was 410 ml (range, 290-520 ml) and average blood transfusion was 1.5 units (range, 0-4 units). There was no perioperative mortality. There were no instances of infection, dislocation, radiographic loosening, osteolysis, stem migration and periprosthetic fractures. None of the patients needed revision surgery. Seven patients developed trochanteric bursitis, two deep vein thrombosis and one heterotopic ossification. The mean Harris Hip Score at 3 months, 6 months, 12 months and 36 months were 72 (range 53-82), 78 (range 55-83), 82 (range 60-92), and 84 (range 65-97) respectively. We found hemiarthroplasty with cementless modular bipolar as the treatment of choice in the unstable intertrochanteric fractures in elderly patients with age more than 70 years.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Dislocation & Fracture Treatment

Time: 08:30 - 10:00

Room: Maktoum A

Abstract no.: 30745

THE USE OF HEMIARTHROPLASTY IN THE TREATMENT OF UNSTABLE INTERTROCHANTERIC FRACTURES

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Background: Treating senile patients with unstable intertrochanteric fracture is still controversial. The use of dynamic hip screw for internal fixation, was usually the option of choice. Recently, the use of hemiarthroplasty had been advocated by some authors as it results in better functional outcome. Aim: The purpose of this study is to determine the clinical outcome of hemiarthroplasty in unstable intertrochanteric fracture in elderly patients. Patients and methods: Between 2007 and 2011, twenty three patients with unstable intertrochanteric fracture were admitted to the trauma unit in Assiut university hospital and were treated by hemiarthroplasty. Results: One patient was dislocated and required open reduction, one patient was infected and was treated by two stage revision procedure and one patient was lost in the follow-up, for the remaining patients the functional and clinical outcomes were satisfactory with a mean Harris hip score of 79, patients were happy to return rapidly for their pre-injury level of activity. Conclusion: According to our results, hemiarthroplasty can be used in the treatment of senile patients with unstable intertrochanteric fracture giving good functional and clinical outcome and allowing early ambulation.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Navigation - Resurfacing - Short Stem

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31488

OFFSET INCREASE AT TOTAL HIP ARTHROPLASTY IS RELATED TO LESSER IMPROVEMENT OF CLINICAL STATUS

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A common intraoperative dilemma at total hip arthroplasty (THA) is whether tensioning of the abductor muscles should be achieved by leg lengthening (it may cause leg length discrepancy) or by increasing the offset. The aim of our study was to find out how leg length discrepancy, leg elongation and changes in abductor lever arm influence clinical status after THA. Retrospective radiographic analysis of leg length discrepancy (LLD) and pre/post-operative offset was performed on 82 patients who underwent uncemented THA performed by a single experienced surgeon at our institution in the 2004-2009 period (Zweymüller and ProfemurZ). LLD was measured both radiographically and clinically. Clinical status of patients was assessed with two standardized and validated questionnaires (WOMAC, Oxford Hip Score) at least 1 year after THA. The mean postoperative LLD was 9 mm and neither radiographic nor clinical postoperative LLD measurements had any significant correlation with WOMAC or Oxford Hip Score. However, we found significant positive correlation between femoral elongation and postoperative improvement of the clinical WOMAC score (Pearson's $R = 0.37$; $p = 0.04$). Inversely, larger postoperative offset values were related to lesser improvement of the clinical WOMAC score (Pearson's $R = 0.38$; $p = 0.03$). We conclude excessive offset increase at THA may lead to worse clinical results. In order to achieve sufficient muscle tension, femoral elongation is a good alternative as long as postoperative LLD remains below 1 cm.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Navigation - Resurfacing - Short Stem

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31105

TOTAL HIP ARTHROPLASTY USING IMAGELESS COMPUTER-ASSISTED HIP NAVIGATION - A PROSPECTIVE RANDOMIZED STUDY

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Introduction: Accuracy of implantation is an important factor influencing the prevalence of impingement, dislocation, polyethylene wear, and aseptic loosening in total hip arthroplasty. The purpose of this study was to compare computer-assisted with freehand implantation of the cementless titanium Alloclassic Zweymüller system. Objectives: In a prospective, randomized, controlled study of two groups of 64 patients each, we investigated the implantation accuracy (cup-position, leg discrepancy), user friendliness, clinical outcome, operation time and navigation related complications when using the imageless Orthosoft Hip 2.2 navigation system compared to the freehand technique. Methods: The position of the acetabular (anteversion and abduction angle) and femoral component was measured on three-dimensional computed tomography reconstructions postoperatively for each patient by an independent observer. The clinical results were investigated using the Harris Hip and the WOMAC Score. Results: The results show a significant increase in accuracy of placement of the components within the safe zone described by Lewinnek, whereas we could find no statistically difference in mean acetabular component inclination and anteversion. The adjustment of leg length was also more accurate, using the imageless navigation without a femoral tracker and no navigation related complications appeared. Conclusion: Although the operating times increased to additionally 20 min in mean we are convinced that this system leads to a higher implantation accuracy and therefore improve the longevity of total hip arthroplasty.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Navigation - Resurfacing - Short Stem

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 32567

THE EFFECT ON RADIOGRAPHIC OSSEOINTEGRATION OF GEOMETRIC VARIATIONS IN ACETABULAR COMPONENT DESIGN

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Introduction: To review prospectively collected data on patients undergoing primary total hip arthroplasty utilizing two different cementless acetabular components. Objectives: To determine if dual geometry acetabular components provided superior, inferior or equal bone ingrowth compared to hemispherical cups. Materials & Methods: All patients undergoing primary total hip replacement surgery were entered prospectively into a database. The patients are re-examined, re-x-rayed and re-scored at 3 months, 6 months and 1 year after surgery and yearly thereafter. We are able to identify patients undergoing total hip replacement with either a hemispherical or a peripheral rim expansion (dual geometry) design. Results: Five hundred and twenty-seven hip replacements were identified. Results at a mean of 7 years revealed a 95.6% survivorship with no significant difference between the two component designs. Functional scores between the two groups of patients were not statistically different. Radiologic assessment showed a difference between the two designs. The hemispherical design had 80% complete osseointegration on final radiologic review while the dual geometry design had only 57% complete osseointegration - this was statistically significant. Conclusion: Dual geometry (peripherally expanded) components offer no advantage over hemispherical components in terms of clinical outcome and are statistically inferior to hemispherical components in radiologic parameters at 7 years.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Navigation - Resurfacing - Short Stem

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 32655

LONG TERM RESULTS OF CHARNLEY LOW OFFSET FEMORAL STEM

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INTRODUCTION: A reduced femoral stem in total hip replacement has been thought to be disadvantageous. We wish to report the long term results of the Charnley low offset femoral stem. **METHODS:** We reviewed the results of 19 surviving patients who had primary hip replacement with Charnley low-offset femoral stem performed by our senior author. The average age was 68 years. The mean follow up was 13.7 years. Male: female ratio was 18:1. Acetabular cup wear was analysed from the postoperative and most recent radiographs of 19 patients using the duo-radiographic technique. **RESULTS:** At the time of the last follow-up 2 hips had been revised, one for subluxation due to impingement and the other for dislocation with loose cup. One hip had recurrent dislocation and was stable with brace treatment. There was trochanteric non union in 3 patients. None of the hips had been revised for aseptic loosening. Wear Measurements Wear could not be measured from the radiographs of one patient. The penetration values were normally distributed, and the mean penetration of the 18 measured cups was 1.3 mm (SD 0.13 mm, $p < 0.0001$). The wear rate was normally distributed and the mean rate was 0.09 mm per year (SD 0.050 mm per year, $p < 0.0001$). The wear volume rates were normally distributed with a mean of 30.8 mm³/year ($p < 0.0001$, SD 17.3 mm³/year, range 7.6 to 56.3 mm³/year). **CONCLUSION:** Our study demonstrates that Charnley low offset stem can produce good, long term results.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Navigation - Resurfacing - Short Stem

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 32176

TOTAL HIP ARTHROPLASTY VS SURFACE REPLACEMENT ARTHROPLASTY, RANDOMIZED CLINICAL TRIAL.

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Hip Resurfacing Arthroplasty(HR)is currently considered as a treatment option for young and active patients.We present the minimum 5years follow up clinical outcomes of HR versus 28mm head total hip arthroplasty(THA)in a prospective,randomized study.Method:Two hundred and nine hips in 192 patients aged between 18and65years were randomized to receive either an uncemented 28-mm THA(100 hips)or hybrid-HR(109 hips).Clinical scores(WOMAC),patient satisfaction,complications,surgery-related outcome,functional outcomes and radiographic evaluation were compared at a mean of 82months(range 60-98).Results:At 5years post-operatively,patients with HR and THA achieved similar WOMAC functional scores 4.7 vs 6.1 respectively (p=0.16).HR did not provide a significantly higher activity level as assessed byUCLA activity scores:7.4 in HR group versus 6.6 THA group at 5 years(p=0.0015).There were similar re-operation rates 8%(8/100) for THA versus 8%(9/109)in HR(p=0.946)but higher revision rate in HR 7%(7/109) versus(3% (3/100)in THA(p=0.247).However,the types of complications were different.In THA group,one recurrent dislocation and two late deep infections required revision;another patient had a femoral shortening osteotomy for persisting symptomatic leg length discrepancy.In the HR,6 patients underwent revision for head loosening and one for adverse reaction to metal debris.Furthermore,one patient needed a femoral neck osteoplasty for persisting femoro-acetabular-impingement and one patient had resection of painful heterotopic ossification.Conclusion:While the HR group presented significantly better activity score at 5 years, differences in WOMAC scores were of slight clinical relevance. Although not statistically significant, a higher revision rate was found for HR. Long-term survival analysis of both patient cohorts is necessary to determine whether there is a potential advantage

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Navigation - Resurfacing - Short Stem

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 31520

MID- TO LONG-TERM RESULTS OF TOTAL HIP ARTHROPLASTY USING THRUST PLATE PROSTHESIS.

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Introduction: Thrust plate prosthesis (TPP) is a bone conserving total hip arthroplasty which has been in clinical use for more than two decades. We report mid- to long-term results of using this prosthesis. Methods: We reviewed 322 consecutive hips in 273 patients who underwent thrust plate prosthesis with metal-on-metal articulation. Hospital notes and outcome scores (modified Harris Hip Score [HHS] & satisfaction score) were reviewed and serial radiographs were assessed. Four zones of interest around the femoral component were assessed as described by Buergi et al. Results: The average age of the patients was 50.7 years (26-74 years) with an average follow-up of 8.1 years (5-15 years). Modified HHS improved from an average of 43.2 pre-operatively to 80.96, 82.15 and 85.52 at 1 year, 5 year and 10-year follow-up respectively. HSS at final follow-up was 76.2. Eighty-five percent of patients were extremely pleased or pleased with the procedure on satisfaction scoring. Thirty-five hips were revised and four additional hips showed radiological signs of failure (12.1% failure rate). The most common indications for failure were aseptic loosening (20 hips), pseudotumors (5 hips), deep infection (4 hips), and bolt/lateral plate related problems (4 hips). Revision procedures were relatively easy because of the bone conserving nature of the primary procedure. Conclusion: Thrust plate prosthesis is an effective alternative for managing arthritis in young patients. Although the problem of pseudotumor formation due to metal ion release was low in this cohort, recent concerns regarding metal-on-metal articulations require a continual follow-up of these patients.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Navigation - Resurfacing - Short Stem

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 32810

FOUR TO SEVEN YEARS RESULTS OF A SHORT CEMENTED FEMORAL COMPONENT.

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Many patients with hip osteoarthritis and severe osteoporosis present for joint replacement. Important issues in old and/or osteoporotic patients it's firm primary stability, respect biomechanics, bone stock preservation and ease of revision should failure of the implant occur. In these patients the gold standard remains the use of cemented implants, at least on the femoral side. Based on our 15 years experience with short stems, we developed a cemented polished short femoral device with innovative features. This implant requires a high neck cut with maximal metaphyseal bone preservation. The instrument set allows perfect cement pressurization and both proximal and distal stem centralization. The tip of the device extends 2 cm below the lesser trochanter. From January 2005 to January 2008 we performed 43 total hip replacement using the Friendly short stem. Mean age was 79 years (71 to 86). Mean follow-up was 5.4 years. Patients were evaluated preoperatively and postoperatively with the HHS. Radiographic examination was performed to evaluate cementing technique, stem alignment, subsidence within the cement mantle, radiolucent lines at the cement-bone and cement-stem interface, cortical hypertrophy, and calcar resorption. Mean HHS improved from 45 (8 to 66) pre-operatively to 93 (86 to 100). Survival rate was 100%. No bone-cement and stem-cement radiolucence, subsidence, cortical hypertrophy and calcar reabsorption were observed. No patients complained of tight pain. Friendly short stem showed excellent results at short to medium term follow up. Short stemmed cemented hip replacement is an interesting innovation with the great advantage of easing a possible future revision.

Date: 2012-11-30

Session: Hip: Total Hip Arthroplasty Navigation - Resurfacing - Short Stem

Time: 10:30 - 12:00

Room: Maktoum A

Abstract no.: 30780

LONG-TERM RESULTS OF A CEMENTLESS GRIT-BLASTED CONVENTIONAL FEMORAL IMPLANT IN PRIMARY TOTAL HIP ARTHROPLASTY

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Introduction: To facilitate MIS and reduce bone loss, short or nearly absent femoral stems have been introduced. Aim of this study was to provide long-term results of a cementless grit-blasted conventional femoral implant in primary total hip arthroplasty. Material and Methods: 332 Alloclassic cementless primary THAs (SL stem and CSF threaded cup) were consecutively performed in 289 patients, 157/132 male/female, mean age 63.3 years (24-85 years), for primary arthritis in 215 hips (65%). Metasul bearings were used in 123 hips (37%). Results: Complications included 3 fractures of the greater trochanter, 2 of the femoral shaft and 10 early dislocations (3.1%). 321 SL stems (96.7% of index cohort) could be analysed after 10 year average follow-up. Postel-Merle d'Aubigné score increased from 10.7 pre-operative to 17 at last FU with good to excellent results for 311 hips (97%). 255 hips (79%) were pain free. Radiographic signs indicating successful osseointegration were noted in 76% of hips. Annual wear rate of the Chirulen® PE liner > 0.1mm was observed in 6 hips (3%). Over the 22 year study period, 6 stems have been revised for any reason (1 aseptic loosening), giving a femoral revision burden of 1.8%. At 15 years, survivorship was 97.5% (95% CI, 88.9-99.5%) and 99.5% (92.1-99.9%), for revision for any reason and revision for aseptic loosening, respectively. At 10 years average FU, the revision per cent observed femoral component years was 0.18. Proximal fibrous encapsulation and conventional PE liner wear remain the last drawbacks of the system.

Date: 2012-11-30
Session: C. Niek Van Dijk
Time: 12:00 - 12:30
Room: Maktoum A

Abstract no.: 33202

**OSTEOCHONDRAL TALAR DEFECT: THE RATIONAL FOR DIAGNOSIS
AND TREATMENT**

C.N. VAN DIJK

., . (NETHERLANDS)

Date: 2012-11-30

Session: Knee: Arthroplasty Knee Revision

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 33429

PRINCIPLES IN REVISION KNEE REPLACEMENT

Chiltranjan S. RANAWAT

., . (UNITED STATES)

Date: 2012-11-30

Session: Knee: Arthroplasty Knee Revision

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 32805

**FAILURE MECHANISM OF KNEE ARTHROPLASTIES - A
RETROSPECTIVE ANALYSIS**

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Incidence of knee arthroplasty revisions are clearly increased in Germany (12300 cases/2010). Related to previous publications polyethylene wear and aseptic loosening presented the common failure mechanisms. The study was designed to clarify which main reasons are responsible for premature failure in correlation to time using modern artificial knee designs in expectation of a clear reduction of aseptic loosening. All TKA revisions done from 2005 up to 2010 at two huge arthroplasty centers were analysed retrospectively. Inter alia the determination of failure mechanism was based on analysis of intraoperative findings including an examination with the patient, detailed inspection of the components, and fluid and tissue culture. The descriptive analysis included failure mechanism in correlation to early, intermediate and late time interval after replacement (< 1st year, 1st – 3rd year, >3 years). 362 TKA revisions were included in this study. In the early failure group the most common failure modes were insufficient alignment (24%) and periprosthetic infection (20%). In addition to periprosthetic infection (19%) ligamentary instability (22%) was responsible for revision indications in intermediate group. In general polyethylene abrasive wear and component loosening played a minor role in all groups. Six years after the primary implantation the number of revision arthroplasties was considerably reduced (24%). All results subsumed we see an explicit shift from aseptic loosening and polyethylene wear to instability, malalignment and periprosthetic infection as main failure mechanisms. Under the assumption of very good functional, but less forgiving modern knee designs the correct operative technique hold a significant value.

Date: 2012-11-30

Session: Knee: Arthroplasty Knee Revision

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 30962

MID-TERM CLINICAL OUTCOME AFTER ISOLATED CHANGE OF THE POLYETHYLENE INSERT IN REVISION TOTAL KNEE ARTHROPLASTY

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Introduction: Total knee arthroplasty (TKA) using a modular design gives the possibility for an isolated change of the tibial polyethylene insert (ITPIC) in patients with failed TKA. The clinical outcome of this kind of surgery is still very controversial. Our aim was the analysis of the mid-term clinical outcome after isolated ITPIC. Method: In this retrospective study we reviewed 56 patients with ITPIC. The average followup was 29.8 months. For clinical evaluation we used the Oxford Knee score, the Knee Society score, the Turba score and the Kujala score. The health-related quality of life was determined with the SF-36 score and the visual analogue pain scale (VAS). Results: The surgeries were performed 72 (min 2, max. 212) months after index TKA on average. The main reasons for ITPIC were instability, wear and acute infection. In the clinical outcome patients achieved 49 (min 20, max. 80) points in the Kujala score, 31.5 Points in the Oxford Knee score (min 12, max. 49), 9.3 points in the Turba score (min 0, max. 17), and 121.5 points in the Knee Society score (min 7, max. 199). Mean level of persisting pain was 2.2. In the SF-36 score patients achieved 36.3 points (physical [min 16, max. 66]) and 51.7 points (psychic [min 15, max. 71]). The re-revision rate after ITPIC was 11.9 %. Conclusion: The clinical outcome after ITPIC revealed good results. Results are better in comparison with the information given in literature for most of the parameters including a lower rate in re-revisions.

Date: 2012-11-30

Session: Knee: Arthroplasty Knee Revision

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 31901

CEMENTLESS REVISION TKA WITH BONE GRAFTING OF OSSEOUS DEFECTS RESTORES BONE STOCK WITH A LOW REVISION RATE AT 4 TO 10 YEARS

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Background: Addressing bone loss in revision TKA is challenging despite the array of options to reconstruct the deficient bone. Biologic reconstruction using morselized loosely-packed bone graft potentially allows for augmentation of residual bone stock while offering physiologic load transfer. However it is unclear whether the reconstructions are durable. Questions/purposes: We therefore sought to determine (1) survivorship and complications, (2) function, and (3) radiographic findings of cementless revision TKA in combination with loosely-packed morselized bone graft to reconstruct osseous defects at revision TKA. Patients and Methods: We retrospectively reviewed 56 patients who had undergone revision TKAs using cementless long-stemmed components in combination with morselized loose bone graft at our institution. There were 26 men and 30 women with a mean age of 68.3 years (range, 56–89 years). Patients were followed to assess symptoms and function and to detect radiographic loosening, component migration, and graft incorporation. The minimum follow-up was 4 years (mean, 7.3 years; range, 4–10 years). Results: Cumulative prosthesis survival, with revision as an end point, was 98% at 10 years. The mean Oxford Knee Scores improved from 21 (36%) preoperatively to 41 (68%) at final follow-up. Five patients (9%) had reoperations for complications. Conclusions: Our observations suggest this technique is reproducible and obviates the need for excessive bone resection, use of large metal augments, mass allografts, or custom prostheses. It allows for bone stock to be reconstructed reliably with durable midterm component fixation.

Date: 2012-11-30

Session: Knee: Arthroplasty Knee Revision

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 30841

TREATMENT OF PERIPROSTHETIC TIBIAL PLATEAU FRACTURES IN UNICOMPARTMENTAL KNEE ARTHROPLASTY: PLATES VERSUS CANNULATED SCREWS

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Introduction: Periprosthetic medial tibial plateau fractures (TPF) are rare but represent a serious complication in unicompartmental knee arthroplasty (UKA). Most common treatment of these fractures is osteosynthesis with cannulated screws or plates. The aim of this study was to evaluate these two different treatment options of periprosthetic fractures. The hypothesis was that osteosynthetic treatment with plates show significantly higher maximum fracture loads than fixation with cannulated screws. Materials and Methods: 12 matched paired fresh frozen tibias with periprosthetic tibial plateau fractures were used for this study. In group A osteosyntheses with angle-stable plates were performed, whereas in group B cannulated screws were utilized to fixate the periprosthetic fractures. DEXA bone density measurement and standard X-rays (ap and lateral) were accomplished before loading the tibias under standardised conditions with a maximum load of up to 10.0kN. Results: In the plate group all tibias fractured with a median load of $F_{max}=2.64$ (0.45-5.68) kN, whereas in the group with cannulated screws fractures occurred at a mean load of $F_{max}=1.50$ (0.27-3.51) kN. The difference was statistically significant with $p<0.05$. Discussion: Angle-stable plates showed significantly higher fracture loads than fixation with cannulated screws. Therefore osteosynthesis with angle-stable plates in periprosthetic tibial plateau fractures should be recommended.

Date: 2012-11-30

Session: Knee: Arthroplasty Knee Revision

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 31641

USE OF TRABECULAR METAL CONES (TM CONE) FOR RECONSTRUCTION OF SEVERE BONE LOSS AT THE PROXIMAL TIBIA IN REVISION TOTAL KNEE ARTHROPLASTY. 35 CASES FOLLOWED 3-72 MONTHS.

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INTRODUCTION:Management of bone loss at the proximal tibia at the time of Revision Total Knee Arthroplasty (rTKA) can be challenging.**OBJECTIVES:**The aim of this study was to evaluate the clinical and radiographical results with TM Cones during a 6-year period, and to look for guidelines for future indications. **METHODS:**From October 2005 to may 2011,310 patients had a rTKA in our hospital. 35 patients (11%) received a TM Cone for reconstruction of severe bone loss at the proximal tibia. Mean age was 65 years, range 51-84 years (F/M = 11/24).All patients were evaluated by the Knee Society Score (KSS). Bone loss at the proximal tibia was classified according to the Anderson Ortopaedic Research Institute (AORI) classification.Bone loss was classified as contained/noncontained, and as +/-"icecreamcone" defect. **RESULTS:**Mean knee-and function scores improved significantly from preoperatively (39 resp. 23) to 1 year (74 resp. 55) follow-up.The prostheses used were RHK (15), LCCK (14), and LPS (6) – Zimmer,Warsaw.Two patients had rerevision because of infection.During rerevision these TM cones were well fixed and difficult to remove. One patient died 3 months postoperatively with the TM cone unrevised. None of the remaining patients (n = 32) have been revised. All follow-up radiographs showed no signs of radiological loosening.**CONCLUSION:**35 rTKA with a tibial TM Cone were followed for 3 - 72 months.2 patients had rerevision and one patient died. The remaining implants (n=32) showed no signs of radiological or clinical loosening. We consider the TM Cone to be a reliable tool in dealing with large bone loss.

Date: 2012-11-30

Session: Knee: Arthroplasty Knee Revision

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 32090

USE OF MEGA-ENDOPROSTHESIS FOR LOWER LIMB RECONSTRUCTION AFTER FAILURE OF HIP AND KNEE ARTHROPLASTIES- OUR EARLY EXPERIENCE.

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Introduction: The aim of this study was to review our short-term experience of using mega-endoprosthesis for limb salvage after failed hip/knee arthroplasties. Methods: Between November 2007 and December 2011 twenty-four patients underwent limb reconstruction surgery using mega-endoprosthesis following failed previous hip or knee arthroplasties. Hospital notes and serial radiographs were reviewed. Results: There were 16 females and 8 males with an average of 69.3 years (48.8-86 years). Megaprosthesis was used in 10 patients for failed hip surgery and in 14 patients for failed knee procedures. The average number of previous surgeries was 3.3 (range 1-7). We describe a system for classifying these prostheses (Types I-IV) based on the extent of bone replaced. The average follow-up was 70 weeks (6 weeks to 245 weeks). Complications included prosthetic hip dislocations (8.3%), peri-prosthetic fractures (8.3%) and deep infections (12.5%). Five patients (20.8%) had to undergo re-revision procedures and one patient was put on long-term antibiotics. One patient died due to an unrelated cause post-surgery. Median outcome scores at final follow-up were: Oxford Hip Score- 23 (6-40); Oxford Knee Score- 23 (5-48); TESS- 38.1 (5.8-62.5). Median UCLA score was 2 (1-6) pre-operatively and 3 (2-9) at final follow-up. Conclusion: Limb reconstruction using mega-prostheses after previously failed hip and knee surgery are complex procedures with a significantly high complication rate in the early post-operative period. Their use should therefore be limited to tertiary centers equipped with the necessary expertise available to manage the complications associated with these very difficult procedures.

Date: 2012-11-30
Session: Knee: Arthroplasty Knee Revision
Time: 14:30 - 16:00
Room: Maktoum A

Abstract no.: 31653

S-ROM® NOILES™ ROTATING HINGE KNEE SYSTEM – LONG TERM RESULTS

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Introduction: Revision knee arthroplasty surgery addresses significant bone loss, infection, malalignment, ligament compromise or a combination of these issues. We report a retrospective study of 46 knee revisions using the S-ROM® Noiles™ Rotating Hinge Knee system between 1998 and 2011. This revision system is based on uncemented diaphyseal and metaphyseal components for stability. Methods: Radiographic analysis comprised of modified method of that described by Engh et al for uncemented hip replacements and the metaphyseal sleeves steps were divided into porous coated and smooth areas for the purpose of this assessment. Spot welding and absence of reactive lines adjacent to the porous coated portion were considered as signs of fixation and implant migration and presence of reactive lines along the smooth portion of the implant as signs of instability. Failure was defined as removal of prosthesis, arthrodesis or limb amputation. Results: The mean age of patients was 70.8 years. Indications for surgery included severe instability due to medial collateral ligament deficiency (n=21), loosening (n=12), Engh Type 3 bone loss (n=4) and spasticity with fixed flexion deformities (n=2). Kaplan-Meier analysis showed a 10 year survival probability of 85.8% (73.1% - 98.4%). Radiographic analysis showed excellent fixation with evidence of spot welding in 34 patients. Conclusion: Patients with S-ROM® Noiles™ Rotating Hinge Knee system showed satisfactory clinical outcomes and radiographic findings for follow up lasting up to 13 years. This prosthesis provides a reliable method of reconstruction in patients with severely depleted bone stock and extensive ligament deficits around the knee.

Date: 2012-11-30

Session: Knee: Arthroplasty Knee Revision

Time: 14:30 - 16:00

Room: Maktoum A

Abstract no.: 31359

EXTENSOR MECHANISM DISRUPTION FOLLOWING TOTAL KNEE ARTHROPLASTY

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Introduction: Extensor mechanism rupture following total knee arthroplasty (TKA) is a rare but devastating complication. It is the most common reason for revision TKA and is a frequent source of postoperative morbidity leading to an otherwise perfectly good TKA useless. Materials and Methods: We present a series of 6 cases with average age of 58 years; 2 infrapatellar, 3 transpatellar and 1 suprapatellar extensor mechanism rupture following TKA. We reconstructed them using hamstring autograft. Results: The average duration of injury since primary surgery was 8.16 weeks (1 to 24 weeks). 4 had fall injury, 1 patella fractured during forceful knee bending and 1 iatrogenic. 3 patients were surgically treated. After 10 to 20 months follow up (Avg: 14.57 months), they had extensor lag ranging from 10° to 45° (Avg: 20°). The suprapatellar extensor rupture produced the least lag. The average ROM after treatment was 94.5° (0°-120°). Discussion: Treatment depends upon the integrity of extensor mechanism, fixation status of the patellar implant, and quality of the bone. Several techniques had been described including cast/brace immobilization with or without operative repair, fixation with sutures/staples, reinforce/reconstruct using autograft, synthetic graft, bovine xenograft and even allograft transplantation. Although these complications may be successfully treated, most may be largely avoided with proper surgical technique and prosthetic component design. Conclusion: We believe that the infrapatellar rupture is the most serious one and carries the worst prognosis. The best treatment option for these injuries is to reconstruct the extensor apparatus using hamstring autograft.

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Room: Maktoum A

Abstract no.: 31043

**ARTHROSCOPIC LYSIS OF ADHESIONS FOR THE STIFF TKA:
OVERALL RESULTS AND RELIABILITY OF GRAVITY FLEXION AS A
PROGNOSTIC INDICATOR OF ULTIMATE KNEE FLEXION**

Zachary POST, Fotios TJOUMAKARIS, Brad TUCKER, Matthew PEPE,
Fabio OROZCO, Alvin ONG

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INTRODUCTION: The purpose of the present investigation is to report on the largest series of stiff total knee arthroplasty (TKA) who underwent arthroscopic lysis of adhesions. Additionally, we aimed to determine whether unassisted gravity flexion attained intra-operatively correlated significantly with final knee flexion. **METHODS:** All patients who underwent arthroscopic lysis of adhesions between 2007 and 2011 for a stiff TKA were included. Data was collected via review of medical records, clinical examination, and patient interviews after Institutional Review Board approval. All surgeries were performed by two fellowship trained sports medicine surgeons and patients were followed until they had reached maximal improvement. **RESULTS:** 39 patients were identified using the aforementioned criteria and were included for analysis (21 women, 18 men). The average pre-op total arc of motion was 62 degrees. The average total arc of motion attained at surgery was 129 degrees ($p < .001$). The average post-op total arc of motion was 98 degrees. The average time from the index procedure to arthroscopic release was 224 days. Average follow up was 8.7 months. Gravity flexion attained intra-operatively was statistically superior to final flexion ($p < .05$). There were no complications from the arthroscopic procedure during this series. 5 Patients ultimately required revision of their TKA while 4 patients were deemed clinical failures as they remained unhappy with their range of motion at final follow-up. **CONCLUSION:** Arthroscopic lysis of adhesions with manipulation is a useful aid in treating arthrofibrosis after TKA. Gravity flexion attained intra-operatively did not correlate with final outcome in this series.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma - Humerus

Time: 08:30 - 10:00

Room: Maktoum B

Abstract no.: 31291

**COMPLEX MALTREATED NEGLECTED TRAUMA OF THE HUMERUS
AND ITS REVISION SURGERY**

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483 cases of neglected/maltreated long bone fractures were seen over the last 4 years. 60 of these cases were humeral fractures that required attention and surgical intervention. Humeral revision trauma cases are particularly interesting and the most challenging of long bone neglected fractures due to the close proximity of neurovascular structures especially when they get entangled within the fibrous tissue which forms due to weeks/years of neglect after the initial erroneous management.. In this presentation, we cover our principles of management for these complex cases and our results are very encouraging, with one re-infection after revision surgery and no non-unions. All of these infected patients had their external fixators or their IM nail removed and were then treated with a compression plate and autologous bone graft. One patient had his IM humeral fibula removed and also replaced with a compression plate and achieved full bony union. In conclusion, plating for infected malunited/non united humeral fractures gives predictable excellent results as long as infection is controlled appropriately before embarking on revision trauma surgery.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma - Humerus

Time: 08:30 - 10:00

Room: Maktoum B

Abstract no.: 31459

INTRAMEDULLARY NAIL VERSUS DOUBLE PLATE IN IPSILATERAL HUMERAL NECK AND SHAFT FRACTURE TREATMENT

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Introduction: An ipsilateral humeral neck and shaft fractures are extremely rare. Aim: The purpose of this study is to review the fracture pattern, complications and treatment outcomes to determine possible treatment protocol and predict the prognosis in patients with ipsilateral humeral shaft and neck fractures. Methods: Sixteen patients (nine female and seven male) with average age of 52.8 years (range; 36-59 years) were included. According to Neer's classification, all were two parts surgical neck fractures. All humeral shaft fractures were in the middle one third. Thirteen fractures were included in simple transverse (A3), three in fragmented wedge fracture (B3). Two patient had associated radial nerve palsy. Results: All patients were followed up at a mean of 35.6 months postoperatively. All surgical neck fractures except one were united uneventfully at an average time of 8.9 weeks. Average UCLA score was 22.1. On the contrary, average ASES score was 75.3. Patients treated with antegrade intramedullary nails presented 71 points, and patients treated with double plates showed 78 points respectively. An average active shoulder elevation at last follow up was 157 degrees. It was 151 degrees for antegrade intramedullary nail group and it was 164 degrees for double plates group. Fourteen humeral shaft fractures healed in near anatomic alignment. Average time to union was 11 weeks. Conclusion: Both antegrade intramedullary nailing and double plates produced reliable outcome for the treatment of this combination injury, however the risk of complication is lower in double plating group.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma - Humerus

Time: 08:30 - 10:00

Room: Maktoum B

Abstract no.: 33140

OUTCOME OF HYDRODISTENSION FOR ADHESIVE CAPSULITIS OF SHOULDER

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INTRODUCTION: Adhesive capsulitis is a common condition affecting nearly 3% of the population. It causes pain and limitation in the range of shoulder movements. Though it is a self-limiting condition, some patients have residual stiffness which may require further intervention. One such technique is hydrodistension, where-in the joint is distended with fluid to release the adhesions, open the rotator interval thereby improving the range of movements. **PATIENTS AND METHODS:** There were nearly 100 patients who underwent hydrodistension of the shoulder. All patients had physiotherapy initially and only patients who failed to respond to non-surgical measures were included. Females predominated in the study. Hydrodistension was done under general anaesthesia. Shoulder joint was localised using image intensifier and injected with a mixture of local anaesthetic (chirocaine) and normal saline, usually between 100-150 mls. The joint was gently manipulated and improvement in range of movements documented. All patients underwent intensive post-op physiotherapy. Most patients demonstrated significant improvement in the range of movements and shoulder scores. Nearly 10% of patients did not improve and subsequently underwent arthroscopic release. **CONCLUSION:** Hydrodistension is a safe and effective procedure in the treatment of stage II adhesive capsulitis of the shoulder particularly non-diabetics, with lesser risks in comparison to arthroscopic release.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma - Humerus

Time: 08:30 - 10:00

Room: Maktoum B

Abstract no.: 32562

DIFFERENCE BETWEEN RADIOLOGICAL AND FUNCTIONAL OUTCOME WITH DELTOID SPLITTING APPROACH VERSUS DELTOPECTORAL APPROACH FOR THE MANAGEMENT OF PROXIMAL HUMERAL FRACTURES WITH PHILOS PLATE

Shah Waliullah SHAH WALI, Vineet Sharma VINEET, Santosh Kumar SANTOSH, Ashish Kumar ASHISH, Kumar Shantanu SHANTANU
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Proximal humeral fractures are one of the common fracture of upper extremity. Good results by various studies have been reported for Proximal Humeral Locking plate (PHILOS) fixation in proximal humeral fractures. We want to evaluate whether it's only the implant which has given good results or different surgical approach utilised for fixation of plate also affects result. Methods: 57 patients with proximal humeral fractures were divided in two groups. In Group A patients classical Deltpectoral approach utilized while in Group B Deltoid Splitting approach was used. All patients were managed by PHILOSplate fixation. Functional outcomes of patient were accessed in terms Constant Scoring System while radiological evaluation was done by taking x-rays to access quality of reduction and union of fracture. Results: All patients were followed for a minimum of 18 months. In group B reduction of tuberosities was better in 3 part and 4 part fractures. Mean Constant score in group A at the end of three months was 56 while in group B it was 62 and statistically significant ($p=.02$). At the end of eighteen months mean Constant score in groupA was 79 while in groupB it was 81 and statistically insignificant($p=.72$). One patient in group B showed axillary nerve paresis in post-op period and recovered at the end of 3 months. Conclusion: We recommend that deltoid splitting approach can be used in 3 part and 4 part complex proximal humeral fractures and in posterior fracture dislocation shoulder which are difficult to approach with deltopectoral approach however care should be taken while inserting calcar screw in PHILOS plate fixation to avoid iatrogenic axillary nerve injury.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma - Humerus

Time: 08:30 - 10:00

Room: Maktoum B

Abstract no.: 32289

THE DEBATE CONTINUES: NAILING VS PLATING FOR TREATMENT OF SHAFT HUMERUS.

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INTRODUCTION: There is always a debate about the choice of operative intervention in humerus shaft fractures requiring surgical intervention. Each method has its own limitations and advantages and the final choice is left to the surgeon to take the decision depending on the fractures and surgeons comfort. **METHODS:** The present study is a prospective study in which 40 patients were treated with Interlock Nail and 35 patients were treated with dynamic compression plate. Average age in the study was 25yrs with 45 males and 30 females. 26 cases were open while 49 were closed fractures. Anterolateral approach was used in proximal shaft fractures and posterior approach in case of distal shaft fractures. **RESULTS:** Union was achieved in 67 cases while non union in 8 cases (6 nailing and 2 plating). The average union time in the nailing group was 16.09 weeks and in the plating group was 17.32 weeks which are almost same showing no significant difference. ($P>0.05$). post op radial nerve palsy was seen in 5 cases (2 nailing and 3 in plating group). There was no significant difference between the two modalities in respect to union time and functional outcome. **CONCLUSION:** Both methods have their share of limitations and advantages. Thus the conclusion is that both are excellent methods for treating fracture shaft humerus and the decision of selection of the method is left at surgeon's discretion and familiarity, also taking into consideration the "nature" or "character" of the fracture.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma - Humerus

Time: 08:30 - 10:00

Room: Maktoum B

Abstract no.: 31471

REVERSE TOTAL SHOULDER ARTHROPLASTY TREATING PROXIMAL HUMERUS FRAKTURES.

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University of Basel, Basel (SWITZERLAND)

INTRODUCTION: Complex proximal humeral fractures are still challenging. In complex proximal humerus fractures there is still a controversy about the proper treatment in elderly. The purpose of the current study was to evaluate early outcomes of reverse total shoulder arthroplasty for four part humerus fractures and proximal comminuted displaced humerus fractures. **METHODS:** 19 patients underwent reverse total shoulder arthroplasty with the use of Delta X-Tend shoulder prosthesis (Depuy). All patients were evaluated clinically and radiologically using the Constant & Murley score. **RESULTS:** All patients, 9 man, 10 woman, were seen clinically and radiologically. The mean age was 79 years (71-89 years). Mean duration of follow up was 18 months with a range of 12 month to 29 months of follow up. The gender and age corrected Constant Murley Score was above 75. No complications have been observed. **DISCUSSION:** Reverse total shoulder arthroplasty is a successful alternative methode for the treatment of complex fractures of the proximal humerus in elderly patients.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma - Humerus

Time: 08:30 - 10:00

Room: Maktoum B

Abstract no.: 31374

PROXIMAL HUMERAL FRACTURES - FUNCTIONAL RESULTS AND COMPLICATIONS

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Introduction: The increased incidence of the proximal humeral fractures has associated complications according the surgical treatment done and this is dependable the type of the fracture. Our objective is transmitting our clinical results and complications according to these two parameters. Methods: Patients treated surgically were considered. Type of fracture were classified by Neer system. Type of surgical treatment was achieved in clinical process. Type of complication was observed in clinical and radiological data. T Student test was used in the statistical analyze. Results: 94 patients (64 women) with 61 mean age (21-87) and 23,9 months of mean follow-up. Type of complication: head perforation by screws (5/60); subacromial plate impingement (7/54); infection (1/86); lost of reduction without screw perforation (5/63) and with screw perforation (13/63); head necrosis (5/63); non union (2/72); screw pull-out (3/63); plate pull out (1/57); mal union (24/70) and proximal head replacement migration (4/12). Complications related with surgical technique: fixation with K wires (2/2); transosseus suture (2/9); LCP plate (25/55); other plate (1/2); hemiarthroplasty (4/12) and screw osteosynthesis (3/6). Complications associated with fracture pattern: Neer 2 (9/29); Neer 3 (13/30); Neer 4 (11/21); Neer articular (3/3). Conclusion: Mal union and lost of reduction with screw perforation were the most frequent complication. The incidence of complications in the hemiarthroplasty is 30 %. The more complex fractures are more prone to get complications.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma - Humerus

Time: 08:30 - 10:00

Room: Maktoum B

Abstract no.: 30764

THE ROLE OF EXTERNAL FIXATION IN THE TREATMENT OF ARTICULAR, PERI-ARTICULAR AND SHAFT FRACTURES OF THE HUMEROUS DUE TO WARFARE INJURIES

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Introduction: Compound articular and peri-articular fractures around the humerus are very challenging to treat for all trauma surgeons. And some times there is no other alternative than stabilizing the fracture site with external fixation devices. So far we have treated 75 patients, 34 with distal humeral and elbow fractures, 22 with proximal humeral fractures and 19 with shaft fractures. Methods: In all of these cases we have used various types of external fixation devices and the one we found most useful is the hybrid external fixation technique. In intra-articular fractures of lower end we use olive wires for reduction and aligning the articular fragments. The bony defects are replaced using Prof. Mussa Wardak's method 1982 and periarticular fractures of upper end were mostly treated using the Nasir-Awais external fixation device. Results: In all cases anatomy of the part was restored, in intra-articular fractures in 30% of the cases the mobility of the joint was restored to 100% (excellent), in 50% of the cases the joint range of motion varied from 50-75% (good) and in the remaining 20% of the cases range of motion was less than 50% (poor). At the end we would like to state that external fixation proving to be a good fixation method for the mentioned fractures and its use should be encouraged.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma - Humerus

Time: 08:30 - 10:00

Room: Maktoum B

Abstract no.: 31978

RECONSTRUCTIVE TREATMENT OF COMPLICATED CONSEQUENCES OF FRACTURES OF ELBOW JOINT BONES

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An analysis of surgical treatment of 45 patients with consequences of intra-articular fractures of the distal meta-epiphysis of humerus and proximal ulnar and radial epiphyses was made. The average age of patients was 38 +/- 5.3 years, there were 46 men and 21 women. Term of admission to hospital after injury was 6.1 +/- 2.3 months. If non-union occurred bone autoplasty of the bone defect and osteosynthesis using LCP system was performed. In case of consolidation in the wrong position we performed corrective osteotomy, often with bone plasty, and stable osteosynthesis. In cases of bone consolidation in a satisfactory position, but with contractures at the elbow open mobilization of the elbow joint from one or two surgical accesses was performed. If necessary, neurolysis and transposition of ulnar nerve were made complementary to the main surgery. At the final stage of treatment after bone consolidation and bone restructuring, if any residual contracture was observed, during plates removal we performed elbow joint arthrolysis, which allowed further increase of range of motion in the elbow joint. In all patients from the first days after surgery active dynamic rehabilitation program was used, it included three periods of movements development in the elbow joint. In patients of the 1st group satisfactory functional results were achieved - range of motion in the elbow joint was (100 - 135 degrees). In the 2nd group of patients the results were not so good and range of motion in the elbow joint consisted 75 - 110 degrees.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma - Humerus

Time: 08:30 - 10:00

Room: Maktoum B

Abstract no.: 31485

**AO EXTRA-ARTICULAR DISTAL HUMERUS LOCKING PLATE –
EXTENDED SPECTRUM OF USAGE IN INTRA-ARTICULAR DISTAL
FRACTURES WITH METAPHYSEAL EXTENSION – OUR EXPERIENCE
WITH 20 CASES**

**Sameer AGGARWAL, Vishal KUMAR
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Background: Extra-articular Distal Humerus locking Plate designed by AO has been used in Extra-articular fractures of the distal humerus. They provide anatomically shaped and angular stable fixation system for extraarticular fractures of the distal humerus. We extended the usage spectrum of this plate to the extra-articular with intraarticular distal humerus fractures and compared it with the standard bicolumnar 90-90 locking plate fixation. Methods: We included 22 consecutive distal humerus intra-articular fractures with metaphyseal and diaphyseal extension into the study. Each case underwent osteosynthesis with Extra-articular Distal Humerus locking Plate fixation and augmented the intra-articular fragments with 3.5mm partially threaded cancellous screws. The cost, operative time, post-operative complications were recorded. The radiological union, post-operative elbow range of motion were assessed at 3 months and 6 months follow-up visits. 20 cases completed the scheduled follow-up. The results were compared with retrospective data of 20 cases from our institute where similar fractures were treated with standard bicolumnar 90-90 titanium locking plate fixation. Results: The radiological union rates and the range of motion at 3 months and at 6 months in both the groups were comparable and did not vary significantly ($p>0.05$). The cost and operative time with the Extra-articular Distal Humerus locking Plate were significantly less ($p<0.05$) when compared to the group where 2 titanium locking plates were used. Conclusion: The usage spectrum of Extra-articular Distal Humerus locking Plate can be extended to intra-articular fractures. It provides good results and significantly reduces the cost and operative time.

Date: 2012-11-30
Session: Shoulder & Elbow: Sports
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 32102

LONG TERM RESULTS AFTER ARTHROSCOPIC SHOULDER STABILISATION

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Introduction: The aim is to evaluate the long-term follow up after arthroscopic stabilization using suture anchors with emphasis on both re-dislocations and subjective shoulder function. Material and Methods: We included 67 consecutive patients with 70 affected shoulders. After 8-10 years patients were asked to report the presence and course of their re-dislocations. Subjective shoulder function was addressed using the OIS, the WOSI and the SST. Patients rated their health status using the SF-36. Results: Sixty-five patients with 68 affected shoulders (97%) were evaluated for follow-up, 35% reported a re-dislocation. We found a relationship between the number of suture anchors and recurrent instability, with 2 having a higher recurrence rate than 3 or more ($p = 0.06$). Also the presence of a Hill Sachs defect, slightly increased the risk of a re-dislocation ($p = 0.07$). Median shoulder function scores were 16 out of 12-60, 22 out of 0-210 and 12 out of 0-12 for the OIS, WOSI and SST respectively. Conclusion: With a follow-up of 97%, about one-third of the stabilized shoulders experienced at least one re-dislocation after 8-10 years. □The presence of a Hill Sachs defect and the use of less than three suture anchors might increase the chance of a re-dislocation. Patients without a re-dislocation have a significantly better shoulder function compared to patients with a re-dislocation.

Date: 2012-11-30

Session: Shoulder & Elbow: Sports

Time: 10:30 - 12:00

Room: Maktoum B

Abstract no.: 33034

COMPARATIVE STUDY BETWEEN ARTHROSCOPIC LABRAL REPAIR USING SUTURE ANCHOR WITH OR WITHOUT ELECTROTHERMAL CAPSULORRAPHY IN RECURRENT DISLOCATION SHOULDER

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Introduction: The arthroscopic method offers a less invasive technique of Bankart repair for traumatic anterior shoulder instability. This study aims to compare the outcome of arthroscopic Bankart repair with the use of suture anchors with or without electrothermal capsulorrhaphy. Forty cases were followed-up for at least one and half years from the date of surgery. Methods: 40 patients with recurrent dislocation shoulder underwent arthroscopic Bankart repair with suture anchor in group I and Bankart repair using suture anchor with electrothermal capsulorrhaphy in group II. The mean age at the time of operation was 28.25 years. The patients were assessed with (the University of California at Los Angeles [UCLA]). The mean duration of follow-up was 21.2 months. The recurrence rate, range of motion, and postoperative function were evaluated. Results: The shoulder score significantly improved after surgery. According to the UCLA scale, 20 shoulders had excellent or good scores in group II and 18 had excellent or good scores in group I (90 percent), two shoulders (10 percent) had poor score in group I. All 5 components of ULCA showed improvement, which was statistically significant. Overall, the rate of postoperative recurrence was 5 percent (one shoulder in group I). All patients either maintained or demonstrated improvement of range of motion. Conclusion: Arthroscopic Bankart repair with the use of suture anchors is a reliable treatment method that can provide a good clinical outcome with excellent postoperative shoulder motion and low recurrence rate, there is no great statistical difference between both groups.

Date: 2012-11-30
Session: Shoulder & Elbow: Sports
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 31519

INFLUENCE OF BONY BANKART ON ARTHROSCOPIC REPAIR OF INSTABILITY OF THE SHOULDER

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The objective: to evaluate the clinical outcome of an arthroscopic stabilization procedure of recurrent instability of the shoulder, in relation to the size of the preoperative glenoid defect. M and M: Patients with an insufficient MRI-arthro, a large Hill Sachs lesion or poor quality of soft tissues (capsule, IGHL) were excluded to minimize the influence of these factors on the clinical outcome. Analysis was performed by questionnaires (WOSI, NSST) and a clinical examination (ROWE, Constant score). We used the en face sagittal oblique view of the preoperative MRI-arthro in combination with Osiris® software to calculate the percentage of bone loss of the glenoid circle. Results: 53 patients were included. The mean follow-up was 41 months (24-45). The mean size of the glenoid defect was 8,27% (0%-27,3%) of the circle. The postop. ROWE score (mean 86) was higher as the preoperative score ($p < 0,05$). 3 shoulders redislocated. We could not find a significant correlation between the size of the glenoid defect and the questionnaires, clinical outcome and redislocation rate. Discussion: The used concept of the inferior part of the glenoid being a circle can be used in assessing the glenoid bone loss in shoulder instability. The Osiris software in measuring the defect is simple and reproducible. Although the glenoid bone loss is generally accepted as being an important factor in the success of an arthroscopic soft tissue procedure, we could not find a relation between the size of defect and the redislocation rate as well as clinical and subjective outcome.

Date: 2012-11-30

Session: Shoulder & Elbow: Sports

Time: 10:30 - 12:00

Room: Maktoum B

Abstract no.: 32775

A SYSTEMATIC REVIEW OF THE OUTCOMES FOLLOWING ARTHROSCOPIC “REPLISSAGE” FOR SHOULDER INSTABILITY.

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Introduction: Bankart repairs for the management of recurrent instability have demonstrated excellent results in patients with a Bankart lesion. The presence of an engaging Hill-Sachs lesion may be a cause of failure following Bankart repair. Purchase et al described the arthroscopic “Remplissage” technique. Methods: A literature search of the EMBASE, Medline and CINAHL databases using keywords: “shoulder”, “glenohumeral joint”, “instability”, “arthroscopic”, “dislocation”, “Hill-Sachs”, “Remplissage”, “capsulodesis”, “tenodesis” was performed, revealing 7 unique results. Of these, 4 review articles, one case report and one description of surgical technique were excluded. Case number, demographics, follow-up characteristics and outcomes were extracted. Results: There were 3 case series’ and one cohort study. Zhu et al reported a series of 49 cases of arthroscopic Bankart repair with Remplissage. Nourissat et al conducted a prospective cohort study comparing arthroscopic Bankart repair alone(n=17) vs. arthroscopic Bankart repair and Remplissage(n=15). Park et al investigated the effect of arthroscopic Bankart repair with Remplissage on instability in 20 patients. Haviv et al evaluated the outcome of 11 patients. Combined; the 85 patients treated with arthroscopic Remplissage for shoulder instability in the literature had a mean age of 27.1years and a mean follow up period of 27.9months. In these 85 patients there were 5 dislocations, 2 subluxations and 1 positive apprehension test, giving a failure rate of 9.4%. Conclusions: These early results demonstrate a low recurrent dislocation rate following arthroscopic Remplissage. Further studies with larger case numbers and longer follow-up are required in order to corroborate the promising findings from these early studies.

Date: 2012-11-30

Session: Shoulder & Elbow: Sports

Time: 10:30 - 12:00

Room: Maktoum B

Abstract no.: 32720

POSITIONAL COMPLICATION IN SHOULDER ARTHROSCOPY

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(UNITED KINGDOM)

Introduction: Intra-operative positioning injuries during shoulder arthroscopy are rare complications that include nerve injury, thermal injury of soft tissue (from cold light source), complications from excess fluid gained during arthroscopy, etc. Most often they are reversible. The legal responsibilities and the importance of intense preoperative check for possible risk factors are again high-lighted. Method: We report a series of 4 cases of superficial to deep 'burn like' bullous lesions that occurred in the upper arm region during therapeutic shoulder arthroscopy. A retrospective review of therapeutic shoulder arthroscopies over 5 years by the senior author MSS, averaging 206 shoulder arthroscopies per annum since 2004, revealed this rare complication. Results: After a very thorough investigation we could only speculate the lesions to be due to one of the following: a) grounding from saline with the use of RF probe (ArthroWand Super TurboVac 90, IFS, ArthroCare Sports Medicine International) b) probable improper use of the Smith & Nephew, Inc (Andover, MT, USA) arm suspension kit, or c) a reaction to the 3M CobanTM (3M, Minneapolis, MN, USA) suspension apparatus. Conclusion: Since the change to the use of the SPIDER limb positioner (Smith & Nephew, Inc, TENET medical engineering) arm holder we have had no further intra-operative positioning complications. We believe that this is the first report of such a complication in shoulder arthroscopy.

Date: 2012-11-30
Session: Shoulder & Elbow: Sports
Time: 10:30 - 12:00
Room: Maktoum B

Abstract no.: 31728

**EVALUATION OF ARTHROSCOPIC MANAGEMENT OF TENNIS ELBOW;
EMPHASIS ON RESECTION OF RADIO-CAPITELLAR CAPSULAR
COMPLEX (RCCC)**

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Abstract; Background; Since the early description of tennis elbow, there has been controversy regarding the pathogenesis and treatment of lateral epicondylitis Patients and Methods; A Clinical study was done to investigate the results of elbow arthroscopy in management of resistant tennis elbow cases. In this study, arthroscopic resection of a capsular fringe complex was done in addition to debridement of the undersurface of Extensor Carpi Radialis Brevis. Twelve patients with recalcitrant symptoms of lateral epicondylitis for a minimum of 6 months had surgery. In all patients at arthroscopy, a collar-like band of radiocapitellar capsular complex was found to impinge on the radial head and subluxate into the radiocapitellar joint with manipulation under direct vision. Results; There were no complications in this series. Assessment was done using Patient-Rated Tennis Elbow Evaluation score, (PRTEE). Eight patients had complete relief of symptoms by this procedure within 2 weeks of surgery. The average time until return to work was 7 days. Conclusion; the arthroscopic release in patients with radial epicondylitis is a reproducible method with a marked postoperative increase in function within a short rehabilitation period, with special consideration for resection of Radiocapitellar capsular complex Key words: Tennis elbow, Elbow arthroscopy, Radio-Capitellar Capsule Complex, Lateral epicondylitis.

Date: 2012-11-30

Session: Shoulder & Elbow: Sports

Time: 10:30 - 12:00

Room: Maktoum B

Abstract no.: 30915

COMPARISON BETWEEN BEACH CHAIR AND LATERAL DECUBITUS POSITION IN ARTHROSCOPIC SHOULDER STABILIZATION WITH SUTURE ANCHOR TECHNIQUE MIDTERM RESULTS

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Purpose: The purpose of this study was to evaluate and compare the clinical results of arthroscopic capsulolabral reconstruction using suture anchor fixation (Bio Fastak Anchor Arthrex ,Naples USA) performed in beach chair and lateral decubitus position for anterior dislocation of the shoulder. Methods : From december 2004-september 2007 38 patients who underwent arthroscopic capsulolabral reconstruction of the shoulder were enrolled , their clinical outcomes were retrospectively evaluated . In group A (22 patients) ,the procedure was performed in beach chair position ,in group B (16 patients) in lateral decubitus position. The average follow up period was for group A 50,6 month (range 31-71 month) and for group B 49,1 month (range 30-58 month). The postoperative assessment including Rowe-Score , Kohn Score , recurrent instability ,the level of return to sports activity and the subjective satisfaction with the treatment between the two groups. Statistical analysis was performed. Results: The demographic of the two groups was not significantly different. There was no significant differences in the Rowe Score (group A 89,5 vs group B 87,4) ,Kohn Score (group A 89,1 vs group B 86,7) and subjective satisfaction of surgery . ROM of the shoulder was fully recovered in most of the patients . Recurrent instability none case in group A and in one case in group B. Conclusion: The midterm results of the present study showed that the position during arthroscopic stabilization of traumatic anterior shoulder instability with biodegradable suture anchor does not influence the functional outcome .

Date: 2012-11-30

Session: Shoulder & Elbow: Sports

Time: 10:30 - 12:00

Room: Maktoum B

Abstract no.: 31850

EVALUATION OF RESULTS OF INTERNAL FIXATION OF CORONOID FRACTURES OF ELBOW

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Coronoid fractures are often seen as a part of complex elbow fracture dislocations. They are involved in the "Terrible Triad Of Elbow" consisting of #head radius, Dislocation Elbow & Fracture Coronoid. Repair of the coronoid fracture may be necessary for restoring elbow joint stability after fracture dislocation. Large coronoid fractures often are associated with persistent elbow instability even after reduction of the dislocation & therefore Internal fixation is necessary. Material & Methods;15 patients of Fracture Dislocation Elbow with Fracture Coronoid were Treated from Jan 2005 to Dec.2008. There were 10 males & 5 females ranging from age Groups 22 to 68 years .Rt side was predominant , all were associated with Road traffic accidents & fall on Outstretched hands. All fracture-dislocations were reduced & examined under GA & then further line of action was taken. All were fixed with some implant ,2 underwent MCL ligamentoplasty, 1 had Biceps Avulsion rupture & was fixed with Mitek absorbable anchor suture. 2 were old Fracture –dislocations treated outside & came after 15-20 days. In those open reduction was attempted.Results ; 12 out of 15 had excellent results , 2 had moderate results & 1 had poor results. Flexion was easy to get, patients had 2-5 Degrees of Extensor Lag , but regained normal functional status. Conclusions ;Fixation of coronoid fractures In Unstable Fracture –dislocations of elbow improves the results in view of motion & Stability. Key –words; Instability, Primary Osteosynthesis, Ligamentoplasty

Date: 2012-11-30
Session: Shoulder & Elbow: Arthroplasty
Time: 14:30 - 16:00
Room: Maktoum B

Abstract no.: 31696

LONG-TERM RESULTS OF CANCELLOUS COMPACTION TECHNIQUE FOR GLENOID REPLACEMENT IN TOTAL SHOULDER ARTHROPLASTY FOR PRIMARY OSTEOARTHRITIS

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Introduction : Aseptic glenoid loosening remains a common problem in total shoulder arthroplasty (TSA). This study presents long-term prospective follow-up after implantation of glenoid component using the “cancellous compaction technique” and its effect on outcome and presence and progression of radiolucent lines (RLLs). Methods: Thirty-nine TSAs were performed for primary osteoarthritis by one surgeon using the same technique. For the glenoid side, a keeled, polyethylene component was implanted using the “cancellous compaction technique” consisting of minimal reaming, compaction bone grafting of the glenoid and limited addition of cement. Postoperative clinical outcome was analyzed using Constant scores and patient’s subjective evaluation. Independent observers evaluated post-operative X rays for RLLs around the baseplate and keel. Results: At a mean follow-up of 8.5 years (range 4.7 – 12.5 years), the Constant score improved from 33.5 to 73.0 points ($P < .0001$). Active anterior elevation improved from 96.2° to 138.6° ($P < .0001$), active external rotation improved from 18.2° to 43.9° ($P < .0001$). Pain score improved from 3.1 to 13.6 ($P < .0001$). Radiologically, the RLL score increased from 1.4 (range, 0-3) immediately postoperative to 5.7 (range, 0-18) ($P < .0001$) at final-follow-up. The rate of definite radiological glenoid loosening was 15.4 %. Subjectively, 94.8% of the patients were either very satisfied or satisfied, and the rate of revision surgery for glenoid loosening was 0.03%. Conclusion: This study showed highly satisfactory clinical outcomes and extremely low rates of revision for glenoid loosening using a bone-saving compaction technique for implantation of a glenoid component.

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Time: 14:30 - 16:00

Room: Maktoum B

Abstract no.: 31760

**PENETRATION DEPTH AND SIZE OF THE NON-ARTHRITIC GLENOID:
IMPLICATIONS FOR GLENOID REPLACEMENT**

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Proper glenoid component sizing plays a crucial role for successful shoulder arthroplasty. In this study, we measured the glenoid size together with penetration depth using three-dimensional computed tomography. From January 2010 to January 2011, 38 patients, including males and females, without evidence of a pathological glenoid, were enrolled for this study. CT images were taken and subsequently reconstructed in 3D images. The height of the glenoid was measured and the width was measured at five different levels (H1-H5). Axial images were taken at each level, with the anteroposterior glenoid diameter divided into eight areas (W1-W7). The penetration depth between the near and far cortices at points W1-W7 was also measured. The overall mean height of the glenoid was 37.67 ± 4.09 mm. The width of the glenoid was the greatest at the distal 4/5th point and it was the least at the proximal 1/5th point. The penetration depth of the glenoid increased as the reference point progressed in the posterior direction, which was at the 5/7th point from the anterior margin. The measurement was greatest at the W4 point at the H1 level, but the W5 point was greatest at all other levels. Based on this study, the posterior and inferior parts of the glenoid are thinner than the anterior and superior parts. Thus, caution must be taken when inserting screws into the posteroinferior parts, where the glenoid is thinner than 15 mm, especially in females, to avoid penetration of the far cortex.

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Room: Maktoum B

Abstract no.: 31026

DIFFERENCE IN CLINICAL OUTCOME BETWEEN TOTAL SHOULDER (TSA) AND REVERSE SHOULDER ARTHROPLASTY (RSA) USED IN REVISION SURGERY

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INTRODUCTION: Increase of shoulder replacements will lead to a higher revision rate of shoulder arthroplasties. Our aim was to evaluate clinical results of revision surgery performed in our hospital, distinguish differences in clinical outcome according to revision indication and differences between Total Shoulder Arthroplasty (TSA) and Reverse Shoulder Arthroplasty (RSA) in revision surgery. **METHODS:** Indication for revision and demographics were determined. Clinical evaluation consisted of pre- and postoperative Constant scores, Disability of Arm-Shoulder-Hand-score (DASH), Simple Shoulder Test ((D)SST), Oxford Shoulder Test (OSS), SF-36 and complication rate. **RESULTS:** From July 1994 till July 2008, 39 patients (9 male, 30 female) (40 shoulders: 33 hemi, 7 total shoulder prostheses) underwent revision arthroplasty. Mean age at revision surgery 68±10 years (range 43-84). Mean follow-up 62±32 months (range 21-130). In 12 cases TSA was used for revision when the cuff was intact, 3 times a glenoid component was added and 25 times RSA was performed. Indications for revision: glenoid erosion n=7, glenoid loosening n=3, humeral component malposition n=5, cuff-pathology n=18, infection n=4, pain of unknown origin n=3. Post-operative Constant score 55±11 for TSA and 34±18 for RSA (p<0.001). DASH was 47.7±21.2 and 66.3±17.5, respectively (p=0.012). SST showed 5±4 and 4±4 (p=0.315). OSS 39.0±9.9 and 27.1±9.9 (p=0.005). SF-36 45.0±23.8 and 24.4±14.6 (p=0.010). Sixteen shoulders (40%) presented 23 complications. **CONCLUSIONS:** Revision surgery shows a rather high complication rate, poor to reasonable post-operative results and better clinical outcome for TSA. Therefore, when revision is needed and the rotator cuff is intact, a TSA is a preferable solution.

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Abstract no.: 31615

PROXIMAL HUMERAL FRACTURES TREATED WITH HEMIARTHROPLASTY. DOES TENODESIS OF THE LONG HEAD OF THE BICEPS IMPROVE RESULTS?

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Introduction: Pathology of the long head of the biceps (LHB) may be the cause of anterior shoulder pain after hemiarthroplasty for fractures of the proximal humerus. The currently available literature lacks adequate randomized trials examining whether tenodesis of the LHB improves results. We aimed to evaluate the effects of tenodesis of the LHB on the clinical outcome following hemiarthroplasty for fractures of the proximal humerus. Methods: This prospective randomized study included 37 patients treated with hemiarthroplasty for four- part fractures, fracture dislocations and head splitting fractures. The LHB was left intact in 18 (Group 1) and tenodesis was performed in 19 patients (Group 2). The average age was 52 years; all patients were operated on by the same surgeon in the first five days after injury and one type of prosthesis was used. The shoulder was immobilized for four weeks before performing the same physiotherapy protocol. Pain and range of motion were assessed by a blinded observer. Results: Patients were followed up for an average of 24 months. They were evaluated using the Constant score; Group 1 patients had an average score of 69.8 while Group 2 had an average score of 74.4. There was no significant difference in the range of motion in both groups. In Group 1, 6/18 patients had mild to moderate shoulder pain compared to only 3/19 patients who had mild pain in Group 2. Conclusions: The long head of biceps is a source of pain and tenodesis performed with shoulder hemiarthroplasty can significantly improve results.

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Abstract no.: 31444

CLINICAL OUTCOMES OF DIFFERENT TYPES OF GLENOSPHERES IN REVERSE TOTAL SHOULDER ARTHROPLASTY – A MULTICENTER STUDY

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Background: We compare ROM, pain, incidence of scapular notching and stability of reverse shoulder arthroplasty performed with different types of glenospheres. Methods: Between 2003 and 2008, 133 patients (average age 69.2 years, 31% male, 69% female) treated with a reverse shoulder prosthesis (SMR Reverse, Lima Corporate) in 5 hospitals were divided in 3 groups: 63 patients treated with a 36mm standard CoCrMo glenosphere 21 with a 36mm eccentric CoCrMo glenosphere and 52 with a 44mm X-UHMWPE glenosphere. The average follow up was 38.3± 17.4 months. Clinical assessment included Constant score, pain relief and ROM and radiographic analysis. Results: The average CS significantly increased from preoperative to all postoperative time-points for all 3 groups (Wi-test: P<0.001). Nevertheless the preoperative average CS of Group C was significantly lower than Group A and B (WI p= 0.003), Group C showed an average CS percentage increase much more relevant than the other two groups (Group A: CS: +31%, Group B CS: +43% and Group C: CS +50%; WI: p<0.001) at the last follow-up. Furthermore, 44 mm X-UHMPWE glenospheres (Group C) allowed a higher and stable ROM increase (active FF, active ER and IR). Conclusions: We found significantly higher scores, better outcomes with the use of 44mm X-UHMWPE and 36mm eccentric than with the 36mm standard CoCrMo one. We attribute these results to the decrease of inferior notching with eccentric design and to the inversion of the materials.

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Abstract no.: 32599

MAGNETIC RESONANCE IMAGING VERSUS PLAIN RADIOGRAPHY IN THE ASSESSMENT OF GLENOID VERSION FOR OSTEOARTHRITIS OF THE SHOULDER

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Introduction: Glenohumeral arthritis is associated with eccentric posterior glenoid wear and subsequent retroversion. Total shoulder arthroplasty provides a reliable and robust solution for this pattern of arthritis but success may be tempered by malposition of the glenoid component, resulting in pain, functional impairment, prosthetic loosening and ultimately failure. Correction of glenoid retroversion through anterior eccentric reaming, prior to glenoid component implantation, is performed to restore normal joint biomechanics and maximise implant longevity. The aim of this study was to assess whether magnetic resonance imaging (MRI) or plain axillary radiography (XR) most accurately assessed glenoid version and hence provided the optimal modality for pre-operative templating. Methods: Glenoid version was assessed in pre-operative shoulder MRIs and XRs by two independent observers in forty-eight consecutive patients undergoing total shoulder arthroplasty. Results: The mean glenoid version measured on magnetic resonance imaging was -14.3 degrees and -21.6 degrees on axillary radiographs (mean difference - 7.36, $p < 0.001$). Glenoid retroversion was overestimated in 73% of XRs. Intra-observer and inter-observer reliability coefficients for MRI were 0.96 and 0.9 respectively. Intra-observer and inter-observer reliability coefficients for XR were 0.8 and 0.71 respectively. Conclusion: Axillary radiographs significantly overestimate glenoid retroversion and are less precise than shoulder magnetic resonance, which provides excellent intra- and inter-observer reliability. MRI is a useful pre-operative osseous imaging modality for total shoulder arthroplasty as it offers a more precise method of determining glenoid version, in addition to the standard assessment of rotator cuff integrity.

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Abstract no.: 31606

RATES OF RADIOLUCENCIES AND LOOSENING AFTER TOTAL SHOULDER REPLACEMENT WITH PEGGED OR KEELED GLENOID COMPONENTS.

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Hypothesis: Pegged glenoid design compared to keeled design is associated with lower loosening rates and has a better cost-effectiveness. Methods: We conducted a systematic, online of PubMed, EMBASE, CCTR (Cochrane Controlled Trial Register), and CINAHL (Cumulative Index of Nursing and Allied Health) using the search terms "Arthroplasty, Replacement"[Mesh] AND (shoulder) AND (peg* OR keel*). Data on study design and endpoints radiolucencies, loosening, and revision were extracted independently and in duplicate. After assessment of study heterogeneity, DerSimonian-Laird random effect models were used to calculate pooled risk ratios (RR) and differences (RD). The RD was used to estimate the Number Needed to Treat (NNT), i.e. the number of individuals that have to be treated to avoid one less ACL tear. Data on costs and utility were extracted from the literature for a cost-effectiveness analysis Results: Data on 1460 patients could be extracted from 8 studies. We found no evidence for a difference in radiolucencies between the two designs [RR 0.42 (95%CI 0.12 to 1.42), p=0.160]. However, the pegged designs had significantly lower loosening [RR 0.42 (95%CI 0.09 to 1.93)] and revision rates [RR 0.27 (95%CI 0.08 to 0.88)] than the keeled designs. Pegged designs clearly dominated keeled design in the cost-effectiveness analysis. Conclusions: Pegged Glenoid-Designs showed significantly better longevity and cost-effectiveness than keeled Designs.

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Abstract no.: 31025

ARE SHOULDERS WITH A REVERSE SHOULDER PROSTHESIS STRONG ENOUGH?

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INTRODUCTION: It has been suggested that limited active ROM of reverse shoulder prostheses relates to lack of strength. However, information on isokinetic strength has not been quantified. Our aim was to determine joint torques in patients with reverse shoulder prostheses, their correlation with functional scores and to relate results to normal torque data reported in the literature. **METHODS:** We recruited 33 patients (age 72 ± 8 years) with a reverse prosthesis (37 shoulders, 21 primary and 16 revisions). We obtained Constant-Murley, DASH, and Simple Shoulder Test ([D]SST) scores and performed two isokinetic protocols (abduction/adduction and external/internal rotation) at 60°/second. Average followup was 23 months (range, 4-63 months). **RESULTS:** Twenty-three patients (24 shoulders; 13 primary, 11 revisions) were able to perform at least one of the defined tasks. Mean abduction/adduction torques were 15 ± 7 Nm and 16 ± 10 Nm (19%-78% of normal shoulders). External/internal rotation tasks could only be performed by 13 patients (14 shoulders; nine primary, five revisions) generating 9 ± 4 Nm and 8 ± 3 Nm, respectively (13%-71% of normal shoulders). We found moderate correlations between Constant-Murley, DASH and (D)SST scores and abduction and external rotation. **CONCLUSION:** Patients with a reverse prosthesis had reduced strength when compared with normal values from the literature (only 65% of patients could perform the protocol). This effect was greatest for external rotation and might explain clinical outcomes with which a moderately strong relationship was observed. It is likely limited strength is a major factor in reduced ROM.

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Abstract no.: 30774

CEMENTLESS SURFACE REPLACEMENT ARTHROPLASTY OF THE SHOULDER FOR OSTEOARTHRITIS –RESULTS OF 50 COPELAND MARK-3 PROSTHESIS FROM AN INDEPENDENT CENTRE WITH 4-YEAR FOLLOW-UP

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Purpose: We conducted a retrospective review of 53 consecutive Mark 3 Copeland cementless surface replacement hemiarthroplasties in 46 patients with glenohumeral osteoarthritis from an independent institution. **Method:** There were 30 females and 16 males with a mean age of 69 years (45 to 94) and mean follow-up 4.2 years (2 to 8). 50 uncemented hemiarthroplasties were available for review. **Results:** Mean age-adjusted Constant and Oxford scores improved from 38.5 (15 to 61) and 22 (9 to 31) to 75.1 (38 to 87) and 42 (18 to 48) respectively. One patient who had an oversized humeral component developed anterosuperior escape of the humeral head due to progressive rotator cuff failure at 2 years. Moderate glenoid erosion was present in 12%. There was one revision to a stemmed cemented hemiarthroplasty for periprosthetic fracture. No patients have required revision for aseptic loosening, rotator cuff failure or glenoid erosion to date. **Conclusion:** Copeland surface replacement hemiarthroplasty for glenohumeral osteoarthritis can provide functional results comparable with modular stemmed prostheses and hemiarthroplasty from the designers own institution with a low revision rate at 4 year follow-up.

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Abstract no.: 32795

TUBerosITY UNION IN REVERSE SHOULDER ARTHROPLASTY FOR PROXIMAL HUMERUS FRACTURES

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Displaced three and four part fractures of the proximal humerus in the elderly are increasingly treated by reverse shoulder replacement (RSR) arthroplasty. Studies indicate that tuberosity healing is vital in regaining external rotation strength. The aim of the study was to assess the rate of tuberosity displacement and non union in all cases of RSR performed for proximal humerus fractures over a three year period at our institution. All cases of RSR for proximal humerus fractures over the time period were reviewed and the final position of the tuberosities was documented noting any malunion or non union. A total of 20 cases RSR were performed for proximal humerus fractures over a three year period. Two of the cases did not have follow up radiographs and were excluded from the cohort leaving 18 cases for inclusion in the study. The average age of the cohort was 79 years. The average time to operation from injury was 6 weeks (range 2 – 36). The tuberosities were anatomically positioned in 13 cases. At the end of one year, there were 2 non unions (11%), both occurring in tuberosities which were superiorly positioned. All anatomically placed tuberosities united at that position. Two cases showed partial resorption of the united tuberosities, one occurring in an anatomically united tuberosity. Our case series show a lower tuberosity malunion and non union rate than reported in the literature. Tuberosities placed in their anatomical position always united with no subsequent displacement.

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Room: Maktoum B

Abstract no.: 32254

SURGICAL TREATMENT OF COMPLETE ACROMIOCLAVICULAR JOINT DISLOCATION- A REVIEW OF INDICATIONS, TECHNIQUES AND FUNCTIONAL OUTCOME

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BACKGROUND- Although non operative treatment is the gold standard for the grade I and II acromioclavicular joint dislocation, surgical treatment is advocated in complete acromioclavicular dislocations (grade III,IV,V and VI). It is the treatment of grade III injuries that is controversial. **METHOD-** A total of 18 patients with an age range from 22 to 45 years with complete acromioclavicular dislocation were treated by surgical method. Depending on the severity of dislocation, the techniques followed were intra articular acromioclavicular pin fixation, extra articular coracoclavicular screw fixation or combination of both. The coracoclavicular and acromioclavicular ligaments were repaired along with fixation of the joint. Post operatively the limbs were supported with shoulder immobilizer and full abduction was allowed after removal of the implants at 8 weeks. **RESULTS-** All the patients were followed up for a period of 2 to 3 years. Patients were assessed clinically and radiologically. Functional outcome was analysed by taking criteria like pain, function, motion etc. into consideration. Results were found to be excellent in 12 cases and good in 6 patients. Loss of reduction and hardware failure occurred in one case each. **CONCLUSION-** surgical treatment for acute complete acromioclavicular dislocation is justified in young active patients and in those who perform heavy or overhead activities. Pros and cons of the operative treatment options and the functional outcome will be discussed.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma I

Time: 16:30 - 18:00

Room: Maktoum B

Abstract no.: 31277

**ACROMIO-CLAVICULAR JOINT (ACJ) STABILISATION USING THE
'SURGILIG' TECHNIQUE-A DISTRICT GENERAL HOSPITAL
EXPERIENCE**

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The Nottingham Surgilig is double braided polyester ligament utilised for surgical stabilisation of acromio-clavicular joint disruptions. The synthetic ligament has a double loop, one of which is secured at the coracoid and the other loop is held in place over the reduced clavicle with a bicortical screw. There have only been a few reports of the technique outside the centre which developed it. Our retrospective study aims to assess the outcome of the 'Surgilig' technique performed at a District General Hospital in the UK. We identified 20 patients (of whom 90% were males) who underwent this procedure between April 2004 to December 2010. Sixteen of these injuries were grade 3 according to Rockwood's classification and four were grade 4 pattern. Surgical stabilisation was achieved in all patients without any joint stiffness. However four patients had to have further surgical procedures. Two of these were for failed reconstructions requiring re-do Surgilig procedure. One patient had removal of a prominent screw and one patient had wound washouts for deep infection. Prominent appearance of the ACJ was mentioned by 3 patients, whereas 2 patients had scar tenderness. Outcome assessment using the Oxford shoulder score and the Quick DASH score was obtained in 12 of these patients via a telephonic survey. Ten of the 12 patients reported an improvement in the objective scores and only two patients reported that they were not satisfied with the procedure. We conclude that ACJ stabilisation using the Surgilig graft is simple, safe technique that provides satisfactory results.

Date: 2012-11-30

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Abstract no.: 32991

EFFECTIVENESS OF A MODIFIED WEAVER-DUNN PROCEDURE WITH CHIP BONE GRAFT FOR SEPARATION OF THE ACROMIOCLAVICULAR JOINT

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Purpose: To evaluate the clinical results of modified Weaver-Dunn procedure with or without chip bone graft for the treatment of separation of the acromioclavicular joint(ACJ) comparatively. Materials and Methods: Thirty consecutive patients with separation of the ACJ were studied prospectively. Among them, fifteen patients were treated by a modified Weaver-Dunn procedure with additional autogenous chip bone graft(group 1), and fifteen patients were treated by the same procedure without bone graft(group 2). The mean duration of follow-up was 1 year and 9 months in group 1, and 3 years and 5 months in group 2. The clinical results were assessed by Imatani's evaluation system. Results: The results were excellent in all patients. At the time of follow-up, mean coracoclavicular(CC) interval on the affected side was 9.4mm, whereas, that on the normal side was 9.1mm on roentgenographic measurement in group 1. Mean CC interval on the affected side was 6.9mm, and that on the normal side was 6.6mm in group 2. And there was no clinical complications including horizontal instability of the AC joint. Conclusion: This modified procedure with or without autogenous chip bone graft provides the stable and strong reconstruction of separation of the affected ACJ, including horizontal stability as well as vertical stability. A modified Weaver-Dunn procedure and additional chip bone graft(group 1) may play a role of firm and strong healing of the grafted CA ligament into the clavicle in young active patients. Key Words: Acromioclavicular joint, Separation, Modified Weaver-Dunn procedure, Autogenous chip bone graft

Date: 2012-11-30

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Room: Maktoum B

Abstract no.: 33146

MIDSHAFT CLAVICULAR FRACTURES TREATED BY OPEN REDUCTION AND INTERNAL FIXATION USING CANNULATED SCREWS

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Introduction: Fractures of the clavicle are common and seen across all age groups. The traditional treatment of midshaft clavicle fractures has been conservative. Although minimally displaced fractures do well, recent outcome studies have shown higher incidences of fracture malunion, nonunion, and patient dissatisfaction after conservative treatment of displaced midshaft clavicle fractures than previously recognized. Methods: Between 2008 and 2011, 27 cases of midshaft displaced clavicular fractures were stabilizaed with cannulated screws. All patients have been followed to radiographic and clinical union. Results: Twenty five cases united, one case delayed union and one case needed revision with bone graft. There were no cases of pin migration. No major complication occured. The final union rate was 100%. Conclusion: Pinning of selected displaced clavicle fractures offers a means of minimally invasive fixation that allows for early range of motion and function and a lower rate of fracture nonunion and malunion compared with conservative treatments.

Date: 2012-11-30

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Room: Maktoum B

Abstract no.: 32611

COMPARATIVE STUDY OF MIDSAHFT CLAVICLE FRACTURE WITH OPERATIVE AND CONSERVATIVE METHODS

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Introduction: clavicle fracture is a common fracture in day to day practice with dilemma regarding the management of this fracture. Aim of this study is to compare conservative and operative method of treatment. Method: 60 patients presenting to emergency room with fracture are evaluated and randomly treated 30pts with figure of 8 bandage and 30 with nailing or plating according to robbinson classification. Outcome was evaluated with constant murley score; union was achieved in 58 pts. 28pts treated operatively had excellent result and 2 had good result. For those treated conservatively 15 had good result and 10 had excellent and 5 poor. Malunion was present in 8 and 2 non union in conservatively pt.2 superficial infection were seen in operative group. Conclusion: union occurred with both modalities but operative treatment has advantage of early mobilisation and faster union time with less complication rate and early return to work as compared to conservatively treated.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma I

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Room: Maktoum B

Abstract no.: 32656

ELASTIC STABLE INTRAMEDULLARY NAILING IN DISPLACED MIDCLAVICULAR FRACTURES IN ADULTS.

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Background: - Complications of nonoperative treatment in displaced fractures of clavicle in adults are higher in recent studies, like shortening, deformity, malunion with pain and physical impairment, nonunion etc. Therefore, the recent trend is towards surgical management of fractures of clavicle in proper indications. The treatment scenario has been revolutionized after entry of elastic stable intramedullary nailing for clavicle fractures.

Methods: - From 2006 to 2011, 44 displaced clavicle fractures were operated by intramedullary nailing with a Titanium Elastic Nail. The nails were inserted from the medial entry point on the sternal end of clavicle and passed through the fracture site under fluoroscopy monitoring. The outcome measurements were done as per the complications, clavicular shortening after fixation, Constant shoulder score and Disability of Arm, Shoulder and Hand score.

Results: - Closed reduction was successful in 34 patients and the rest 10 needed a small incision for open reduction. There was no nonunion, infection, nail breakage or refracture after nail removal in our series. Shortening of clavicle was seen in 7 patients. Medial protrusion of nail was seen in 6 patients with superficial skin infection in 2 cases. The mean Constant score was 95 (SD 1.9) points and the mean DASH score was 5 (SD 2.9) points.

Conclusion: - Elastic stable intramedullary nailing of displaced midclavicular fractures in adults is a minimally invasive technique with good cosmetic and functional results. This method can be seen as an alternative to plate fixation and nonoperative treatment.

Date: 2012-11-30
Session: Shoulder & Elbow: Trauma I
Time: 16:30 - 18:00
Room: Maktoum B

Abstract no.: 32271

THE USE OF THE DISTAL RADIUS LOCKING PLATE AND TIGHTROPE FIXATION FOR LATERAL CLAVICLE FRACTURES.

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Treatment of lateral clavicle fractures is still discussed controversial. Non-union, residual pain and shoulder girdle instability has been reported with both conservative and surgical treatment. With surgical treatment, a large number 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. Twenty-three patients (17 males, 5 females; mean age 31 yrs (12-70)) were included in this case series. Two patients sustained Neer type one, sixteen Neer type two, two patients Neer type four and three patients Neer type five. All patients were reviewed clinically, radiographically and with Constant score assessment. Union was achieved at a mean follow-up of 7.2 weeks. The mean Constant score at 12 months was 87, the mean DASH score 17.7. The following complications were observed during the follow-up period: one superficial infection settling with oral antibiotics and one non-union in a type five fracture requiring bone grafting. Treatment of distal clavicle fractures remain controversial with research both supporting conservative and operative treatment. However, the mechanism of injury often results in disruptions of the adjacent coracoclavicular ligaments and create instability and increased motion between the proximal and distal fragment. The result of this case series are encouraging and we recommend the use of distal radius locking plates to treat unstable lateral clavicle fractures.

Date: 2012-11-30

Session: Shoulder & Elbow: Trauma I

Time: 16:30 - 18:00

Room: Maktoum B

Abstract no.: 31154

MODIFIED TENSION BAND FOR DISPLACED TYPE 2 LATERAL END CLAVICLE FRACTURES.

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Introduction: Displaced type 2 lateral end clavicle fractures have a tendency to go into delayed union or non-union. Adequate reduction, minimal tissue trauma during implants placement and removal would be ideal modality for fixation of such fractures. Methods: All displaced type 2 lateral end clavicle fractures fulfilling our inclusion criteria were reduced with small anterosuperior incision. Anteroposterior drill holes were made in both fragments and a nonabsorbable polyester suture was passed. Fracture was reduced and fixed with transacromial smooth Kirshner wires. The suture was tied with the knot superiorly in the figure of 8 manner. The arm was supported with arm pouch for 6 weeks. Kirshner wire was routinely removed after 6 weeks. Clinico-radiological outcome was studied at 6 weeks, and monthly interval then after till union. Results: All 16 fractures united. The mean average age of patients was 36.25 years with a SD of 11.35. There was no loss of reduction of fracture even after removal of kirshner wires. The mean average time of union was 10.75 weeks with a SD of 3.92. All regained near normal Range Of Movements and the mean average constant score at the end of one year was 98.37 with a SD of 2.87. All patients returned to preinjury level by end of 1 year. The ROM remained same in those who were followed in successive years. Conclusion: The clinico-radiological outcomes with our modified tension band fixation for displaced type 2 lateral end clavicle fractures were encouraging and comparable with earlier studies.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 32679

DO WE COMPLY? - ANTIBIOTIC PROPHYLAXIS IN PEDIATRIC SPINE SURGERY

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Background: Much attention is focused on reducing surgical site infections (SSI). Literature suggests antibiotic prophylaxis is a key modifiable factor affecting SSIs. Methods: We reviewed compliance to antibiotic regimen in all patients undergoing spine surgery from January 2009-September 2011. We reviewed the anesthetic record identifying: antibiotic regimen ordered, compliance with regimen, and whether SSI occurred. Results: 507 surgeries were identified and included. Current protocol is dual antibiotic treatment with cefazolin (30 mg/kg +/- 10%) and tobramycin (2.5 mg/kg +/- 10%), for drug allergy or prior infection (MRSA, etc.) vancomycin (15 mg/kg +/- 10%) is substituted for cefazolin. Cefazolin and tobramycin are given <60min prior to incision, vancomycin <120min. Cefazolin is redosed every 4 hours +/- 15min, tobramycin and vancomycin every 8 hours +/- 15min. Cefazolin was used in 91.3% of cases, tobramycin 97.6%, & vancomycin 7.5%. In patients receiving cefazolin: 82.5% received the correct pre-operative dose (per weight), 91.6% with the correct timing. This decreased to 79.2% & 83.7%, respectively, for 1st re-dose, and 70.5% & 62.3% at 2nd re-dose. For tobramycin: these numbers, respectively, were 78.6% & 91.3%, 70.3% & 56.3%, and 100% & 0%. For vancomycin: 52.6% & 94.7%, 40% & 60%, no 2nd re-doses required. The study wasn't adequately powered to detect correlation between antibiotic protocol compliance and SSIs as only 15 SSIs occurred in 507 surgeries. Conclusions: Antibiotic regimen compliance is lower than expected despite multi-disciplinary efforts to establish standardized protocol. Efforts to increase compliance are necessary to continue to improve modifiable factors for SSIs.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 31254

PATIENT SAFETY IN ORTHOPAEDIC SURGERY: AN ANALYSIS OF 48,095 CASES OF IATROGENESIS REPORTED OVER A 1-YEAR PERIOD TO A NATIONAL DATABASE

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With scientific and technological advances the practice of orthopaedic surgery has truly transformed lives of millions of people worldwide and total hip, and now knee, replacements can be hailed as miracles of modern medicine, for example. These successes however have a downside – not only is the provision of comprehensive orthopaedic care becoming a fiscal challenge to policymakers and funders, concerns are also being raised about the extent of the associated iatrogenic harm. One, often underused resource which collects reports of healthcare errors is the National Reporting and Learning System (NRLS) in England and Wales. The largest proportion of surgical incidents reported to the NRLS was in the specialty of trauma and orthopaedics: 48,095/163,595 (29.4%). Of these, 14,482/48,095 (30.1%) resulted in iatrogenic harm to the patient and 71/48,095 (0.15%) resulted in death. The leading types of errors associated with harm were those associated with implementation of care and ongoing monitoring (odds ratio (OR) 5.94, 95% confidence interval (CI) 5.53, 6.38), self-harming behaviour (OR 2.14, 95%CI 1.45, 3.18) and infection control (OR 1.91, 95%CI 1.69, 2.17). This paper analyses data from a national database to quantify the extent and type of iatrogenic harm in the specialty and makes suggestions on the way forward. Despite the limitations of such analyses, it is clear that there are many proven interventions which can improve patient safety and need to be implemented. Avoidable errors must be prevented, lest we be accused of contravening our fundamental duty of *primum non nocere*.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 32867

AN INTERNATIONAL SURVERY ON FACTORS INFLUENCING DECISION MAKING IN ORTHOPAEDIC SURGERY

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We undertook an electronic survey of 1147 orthopaedic surgeons worldwide (of whom n=305 were head of department). We sought to determine the usage and relevance of different sources of information when making decision about orthopaedic treatments. Results clearly showed that independent scientific proof had biggest impact on decisions for treatments while OEM (Original Equipment Manufacturer) driven activities like newsletters, white papers or workshops had least impact. There was higher use of scientific journals as information source compared to OEM materials. On the other hand, since most OEM for medical devices employ a considerable workforce to inform or influence hospital managers and leading doctors with marketing activities it can be assumed that lack of information is probably not the reason for low usage of OEM activities. Comparison of answers from three countries UK, Germany and USA show some significant differences. Scientific literature and congresses are significantly more important in the US than in the UK or Germany with all countries on a very high level of importance. In the UK, local meetings with colleagues are more important than in Germany or the USA. In the UK relevance of OEM newsletters or whitepaper for decision on more expensive treatments is bigger than in the USA and Germany. This survey gave an insight into some factors that influence decision making in orthopaedic surgery.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 32327

ECONOMIC IMPACT OF INFECTED TOTAL HIP AND KNEE ARTHROPLASTY IN THE GERMAN DRG SYSTEM

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Background: An enormous economic impact upon the treating hospital can be observed for infected total hip and knee arthroplasties (THA, TKA). The aim of the present study was to evaluate whether a cost effective treatment of infected TKA and THA is feasible in the German DRG System. Patients and Methods: Average total treatment costs were evaluated for infected TKA and THA and compared with a matched pair of non-infected arthroplasties. Data was generated using the health record and the hospitals' health information system. Results were evaluated and compared regarding the total personnel and material costs with respect to the financial receipts. Results: A total of 49 patients with the diagnosis of a peri-prosthetic hip infection and 28 patients diagnosis with an infected total knee arthroplasty were included. A significant increase in the average length of stay, use of medical supplies and third party medical examinations were found for the infected THA and TKA. An average deficiency of 12,685 € per patient was observed for the infected THA and 6,356 € per patient for the infected TKA. An average profit of 781 € per patient was made performing primary THA and 927 € primary TKA. Conclusions: A cost-effective treatment of infected THA and TKA was not feasible with the receipts from the German DRG System. An adaptation of the receipts has to be evaluated. Moreover, other measures have to be considered in order to achieve a comprehensive medical yet financial reasonable standard in the treatment of infected TKA and THA.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 33110

CAN STANDARDISATION OF EQUIPMENT SAVE TIME, MONEY AND THE SANITY OF DOCTORS?

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INTRODUCTION: Junior doctors spend a large proportion of time performing daily jobs such as cannulation, catheterisation, venepuncture and arterial blood gases. In the modern NHS, patients belonging to a speciality team may be scattered throughout different wards. As each ward has a unique equipment cupboard set up, the doctors will be unfamiliar with its layout and will spend extra time searching for equipment. This is both time-consuming and frustrating for the doctor, who is often busy with many tasks to perform. This study sets out to find if there is a significant time difference between getting equipment required for common tasks (cannulation/catheter/arterial blood gas/venepuncture) on a ward with a familiar equipment cupboard to the doctor to a ward with an unfamiliar cupboard. **METHODS:** 50 doctors were taken and timed getting the equipment on familiar and unfamiliar wards for venepuncture, cannulation, arterial blood gas and catheterisation. **RESULTS:** There was a significant difference on the times taken for all the equipment between familiar and unfamiliar wards. **CONCLUSION:** Using purchasing data gathered during 2011 the 900 bed Southern General Hospital in Glasgow would be £6262.82 for cannulas, £353.73 for ABGs and £14659.48 for catheters. The savings to the NHS from just these 3 procedures would be £7,978,510 annually and would save a lot of frustration.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 33019

THE JULY 22ND TERROR ATTACK IN NORWAY

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On July 22nd 2011 a right-wing Norwegian citizen dressed in a police uniform attacked the Government building in Oslo with a carbomb, killing 8 persons. Later the same day he went for a gunshot raid on a summer camp outside Oslo, killing 69. A total of 153 were injured in the two raids. The 35 most critically injured patients were admitted to Oslo University Hospital, Ullevål (OUS). Orthopaedic surgeons were involved in the treatment of 22 (70%) of them. The mean age of these orthopaedic patients were 44 and 18 years respectively in the blast- and gunshot groups. Mean ISS was 24 (1-59), (26 and 19 in the two groups). Mean Probability of Survival was 0,87 (0,28-1), (0,78 and 0,92 in the two groups). 4,7 (1-17) orthopaedic operations were performed on 20 of the patients. Five patients had fractures in the shoulder region, 2 patients had tibial fractures, 1 patient had forearm fracture and 3 patients had hand fractures. 1 patient was amputated above the knee, 1 patient below knee and 3 patients were finger- amputated. One patient was disarticulated in both the shoulder and the hip and 1 patient underwent disarticulation through the elbow joint and resection of the humeral head. In 1 patient a glenoid resection was performed. Seven patients had nerve injuries. All the orthopaedic patients survived. The role of the orthopaedic surgeon is essential in incidents like this where the survivors have significant risks of major disabilities.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 33154

DO EARLY DISCHARGE SCHEMES WORK? A QUALITATIVE PERSPECTIVE.

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Introduction: The length of hospital stay associated with lower limb arthroplasty has reduced over the last three decades. However, little is known about the impact of this approach on patients, their experience of being rehabilitated at home and the perspective of clinical teams facilitating the process of early discharge and supporting patients in community based rehabilitation. Objectives: Focusing on a Early Discharge Scheme [EDS] at a district hospital, the aim was to investigate patient and practitioner experiences. The study was designed to increase understanding of a specific experience rather than test a hypothesis. Design: A mixed methods approach using qualitative and quantitative data collection. Semi-structured interviews were conducted with a purposive sample of 18 patients at two time points (a day before and 6 week after discharge) and 8 out of 10 clinicians (single interviews). Outcome data (Oxford scores, HADS, Pain VAS) was collected on all patients at six weeks following discharge. Results: Qualitative analysis using thematics produced these global themes: 1) Patients overall appreciated aftercare at home for therapy as well as social support. 2) Reality of coping at home was different from expectation prior to discharge. 3) Patients' motivation was affected by a number of factors such as fear of failing, fear of external judgement, family perception etc. 4) Patients felt uninformed and uninvolved in their discharge planning. Interviews with clinicians provided the perspective of the healthcare provider. This analysis was matched with standard patient reported outcome measures (Oxford, VAS, HAD scores) to understand profiles and experiences better.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 31368

AWARENESS OF ACUTE COMPARTMENT SYNDROME (ACS): A SURVEY OF JUNIOR DOCTORS IN A DISTRICT GENERAL HOSPITAL

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As the Junior Doctors are the first point of contact with the patients, their ability to identify early signs of ACS and to act accordingly on the findings is of paramount importance. We conducted a questionnaire survey among 31 junior doctors working in various specialities in our hospital to test their awareness of the clinical features, diagnosis and management of ACS. Only 16 of the doctors had any previous work experience of Trauma & Orthopaedics. Results of the survey showed that 100% of the junior doctors were aware of the definition of ACS. 83% were able to identify pain out of proportion to severity of injury as the most important symptom, but only 58 % knew that pain on passive stretching of the fingers/ toes was the most important clinical sign. 94% were able to recognise that paraesthesia and paralysis as late signs. Initial treatment of splitting plasters and limb elevation, as well as the definitive treatment of surgical decompression were correctly recognised by 87%. Reassuringly 94% of doctors surveyed would seek help from the senior on-call doctor immediately if impending signs of ACS are suspected and 100% would escalate this to contact the Consultant if worried. 100% awareness of ACS should be the goal for every doctor dealing with T&O patients and our survey revealed deficiency in some areas. We suggest that more teaching and formal training is essential to improve awareness. Flow charts about diagnosing and initial management of ACS should be displayed in relevant clinical areas.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 32969

END OF LIFE DECISION MAKING IN ORTHOPAEDICS: ONE UNIT'S 5-YEAR EXPERIENCE.

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In orthopedics we often encounter an elderly, frail and vulnerable patient group, especially in our fractured neck-of-femur population. End of life decision-making is a difficult process, raising moral, ethical and personal issues. As clinicians caring for elderly patients we must understand this area and be able to make timely and appropriate decisions to ensure that patient care and dignity are preserved in the final stages of life. We conducted a 5-year-retrospective study examining end of life decision-making in our patients. This centred on Do Not Attempt Resuscitation Orders (DNAR), Care of the Dying pathways (COD) and resuscitation data. We collected data on 88 patients' with an average age of 84.4 years. The majority of patients had multiple co-morbidities (97.6%) and high average ASA-grade III. In our group 89.8% of patients had DNAR orders implemented. COD pathways were started in 53.4% of our patients which were used appropriately. In parallel to this we looked at resuscitation data, which showed that in patients who underwent resuscitation during our study time period none survived to discharge. In the majority of cases we reviewed decisions were implemented at a very late stage of the patient's pathway. From the results of this study we feel there is a role for increased awareness and understanding of these issues in our practice. Where possible prior discussion and explanation to patients and their families would improve this aspect of patient care to ensure that patients are treated with the dignity they deserve during this most difficult of times.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 31769

CONSENTING IN ORTHOPAEDICS – ASSESSING THE QUALITY OF CONSENT FORMS

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Introduction: Senior House Officers (SHO) in orthopaedics are expected to consent for basic orthopaedic interventions including Dynamic Hip Screw (DHS) and hemiarthroplasty fixation of neck of femur (NOF) fractures. No formal training is administered regarding the consent process. Objectives: To retrospectively examine consent forms to determine if the appropriate risks as advised by the British Orthopaedic Association (BOA) are documented for DHS and hemiarthroplasty fixation and to determine the quality of consenting based on the member of the multi-disciplinary team involved. Methods: Retrospective audit evaluating consent form 1s for DHS and hemiarthroplasty fixation of NOF fractures from October 2009 to January 2010. This was a multiple surgeon series and my hypothesis was the more experienced the member of staff, the more compliant the consent form was to BOA guidelines. Results: 10 hemiarthroplasty patients and 9 DHS patients were identified. Registrars on average mentioned 50% of the risk factors involved for DHS and hemiarthroplasty fixation, SHOs mentioned 60% and Orthopaedic Nurse Practitioners mentioned 75% of the risks. Conclusions: There was not a single consent form that satisfied all the criteria as per recommended by the BOA for DHS and hemiarthroplasty fixation of NOF fractures. In this era of increased legal and ethical scrutiny, it is imperative that consenting for procedures and investigations is meticulous to prevent criticism of us as a profession. A good way of addressing this would be to use pre-printed or electronic consent forms for certain procedures ensuring patients are adequately informed of all risks involved.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics Epidemiology & Economics

Time: 14:30 - 16:00

Room: Maktoum C

Abstract no.: 31734

AUTONOMY IN ORTHOPAEDIC SURGERY. A BIOETHICAL RESEARCH ON THE USE OF ALLOGRAFTS.

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Introduction: Cadaveric allografts (CA) are widely used for anterior cruciate ligament (ACL) repair and bone grafting in trauma and reconstruction procedures. In regard to the bioethical principle of autonomy, we sought to investigate the opinion and preferences of a sample of subjects on the use of CA in orthopaedic surgery. Methods: Two 10 item, reliable surveys were designed and published online. One considering the use of a CA for ACL reconstruction and the other considering the use of bone CA. 546 responses were received. Characteristics of the Survey: After an introductory sentence, the questions were posed. Question 6 was conditional upon Question 5. (Survey in the Results section). Results: The responses of both surveys were compared item per item with to asses equivalency and thus be able to combine the responses. We present the survey with the relative frequency of the responses for each item. Discussion: Patients prefer that the surgeon explain the possibility of using a CA prior to surgery. Most of the patients will accept a CA if correctly informed. Still, 40% of the participants fear an infection. It is important to have in mind the bioethical principle of autonomy and give complete information to patients prior to surgery.

Date: 2012-11-30

Session: Miscellaneous: Thromboprophylaxis

Time: 16:00 - 18:00

Room: Maktoum C

Abstract no.: 32105

PROSPECTIVE FOLLOW-UP EXAMINATION OF ENOXAPARIN AND DABIGATRAN ANTITHROMBOTIC THERAPIES AFTER CEMENTED TOTAL HIP REPLACEMENT

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Enoxaparin and dabigatran etexilate are commonly used in thrombosis prophylaxis after total hip replacement (THR). Current enoxaparin administration guideline is: 4000 IU below 100 kilograms, 6000 IU over 100 kilograms. Dabigatran is also used according to the international guidelines. From 1st February to 31st December 2011 117 patients suffering from primary arthrosis or osteonecrosis of hip joint that had received a cemented THR without preceding anticoagulation therapy were included in our prospective case-control study. Thigh volume changes, perioperative blood loss, hematoma, seroma time were monitored and amount of seroma on 3rd and 7th days after surgery were observed. Four groups were formed: enoxaparin versus dabigatran, body mass below and over 100 kilograms in each treatment. Below 100 kilograms seroma time was on average significantly less ($p < 0.01$), 1.21 (SE 0.27) days in enoxaparin group compared with 2.54 (SE 0.39) days in dabigatran group, and amount of seroma on 3rd and 7th days were significantly smaller in the enoxaparin group (Chi2-test, $p < 0.02$). There were no significant differences between the two groups over 100 kilograms. Seroma time in the enoxaparin group over 100 kilograms was significantly longer than the below 100 kg group (3.27 days SE 0.83 vs. 1.21 days SE 0.27, $p < 0.01$). Amount of seroma on 3rd and 7th days were also significantly more in the enoxaparin group over 100 kilograms than the below 100 kg group ($p < 0.02$). Both medicines have appropriate antithrombotic effect after THR, however larger seroma can interfere with healing of surgical site and can have higher infection risk.

Date: 2012-11-30

Session: Miscellaneous: Thromboprophylaxis

Time: 16:00 - 18:00

Room: Maktoum C

Abstract no.: 32340

RIVAROXABAN FOR THROMBOPROPHYLAXIS AFTER MAJOR ORTHOPAEDIC SURGERY OF THE HIP AND KNEE IN CLINICAL PRACTICE – RESULTS OF A NON-INTERVENTIONAL, PHASE IV (XAMOS) STUDY

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In the RECORD clinical programme, rivaroxaban regimens demonstrated superior efficacy to enoxaparin regimens, with a similar safety profile, for the prevention of venous thromboembolic events in patients undergoing elective hip or knee replacement surgery. XAMOS was an international, non-interventional, open-label cohort study assessing rivaroxaban for thromboprophylaxis in patients after major orthopaedic surgery of the hip or knee. Adverse events in patients receiving rivaroxaban or conventional thromboprophylaxis regimens in everyday clinical practice were assessed. Approximately 200 centres enrolled patients undergoing elective hip or knee replacement surgery (or hip fracture surgery) and receiving rivaroxaban or other thromboprophylaxis. The type, duration and dose of the drug were determined by the attending physician. All adverse events, including symptomatic thromboembolic and bleeding events, were documented by the investigators. Of 16,516 patients included in the propensity score based analysis, 8548 received rivaroxaban and 7968 received conventional thromboprophylaxis. The incidence of symptomatic thromboembolic events was 0.90% in patients treated with rivaroxaban compared with 1.31% in those treated with conventional thromboprophylaxis (odds ratio [OR] 0.69; 95% confidence interval [95%CI] 0.56–0.85) in the adjusted full safety population. The rates of major bleeding were similar between the rivaroxaban and conventional therapy groups (0.41% vs 0.34%, OR=1.35 [95%CI 0.94–1.93] using RECORD definition; 1.73% vs 1.53%, OR=1.21 [95%CI 1.01–1.45] using EMA definition). The efficacy and major bleeding outcomes were similar to those in the RECORD studies. The XAMOS study confirmed the real-world clinical benefit of thromboprophylaxis with rivaroxaban in orthopaedic surgery patients that was demonstrated in the RECORD programme.

Date: 2012-11-30

Session: Miscellaneous: Thromboprophylaxis

Time: 16:00 - 18:00

Room: Maktoum C

Abstract no.: 30884

VENOUS THROMBOEMBOLIC PROPHYLAXIS AND LOWER LIMB ARTHROPLASTY – COMPARING TWO PHARMACOLOGICAL REGIMES

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INTRODUCTION: Recent UK national guidelines advocate using combination of mechanical and pharmacological VTE prophylaxis in patients undergoing lower limb arthroplasty but do not recommend one particular pharmacotherapy over another. **OBJECTIVES:** We compared results from our two series of patients: one treated with clexane and other with rivaroxaban, with respect to average length of stay, postoperative wound leakage, readmission within 30 days of surgery and re-do surgery. **METHODS:** Both groups were comparable in terms of age, sex and proportion of hip and knee patients. Both groups received mechanical prophylaxis. In the first group 89 patients were given 40mg subcutaneous clexane once daily from the day prior to surgery until they were independently mobile. The second group comprised 99 patients who were given 10mg of oral rivaroxaban. The first dose was administered 8-10 hours postoperatively and continued once daily for 14 days for total knee replacement and 35 days for total hip replacement. **RESULTS:** The mean length of stay was 5 days in clexane group and 5.5 days in rivaroxaban group. 24 patients stayed in hospital for 5 days or more because of wound leakage in rivaroxaban group compared to 10 in clexane group. 5 patients were readmitted in clexane group: pulmonary embolism (3), dislocation (1) and periprosthetic fracture (1). 5 patients were readmitted from rivaroxaban group: infection (4) and PE (1). No patients in clexane group required re-do surgery. 2 patients in rivaroxaban group went back to theatre. **CONCLUSION:** This study raises concern regarding rates of postoperative complications with rivaroxaban prophylaxis.

Date: 2012-11-30

Session: Miscellaneous: Thromboprophylaxis

Time: 16:00 - 18:00

Room: Maktoum C

Abstract no.: 33079

3 ½ YEARS CLINICAL EXPERIENCE WITH RIVAROXABAN, THE FIRST ORALE FACTOR XA INHIBITOR: FROM CLINICAL TRIALS TO DAILY LIFE.

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Rivaroxaban is now approved for over 3 years in Germany for VTE prophylaxis in elective hip and knee replacement. The cumulative incidence of symptomatic VTE events under Rivaroxaban, compared to enoxaparin, was reduced by 50% over the treatment and follow up period. This very low rate of symptomatic events was confirmed in clinical daily life. The main advantages of rivaroxaban are the once daily dose of a small well tolerated tablet that can be used in patients with renal impairment, with a late postoperative start of 6-10 hours. The short half life simplifies any emergency situation and provides an easy catheter management. Since October 2008 we used rivaroxaban in VTE prevention in elective hip and knee replacement in more than 1.500 patients. In any case duration of prophylaxis was 5 weeks and we performed a follow up visit 3 months after operation. Main objective of this observational study was to determine if the results found in RECORD studies differs from daily life. In our population the significant reduction of VTE events could be also confirmed without an increase of bleeding events. The rate of cardiovascular events also was very low, probably due to the combination with aspirin. In the early use of this novel anticoagulant, we observed occasionally some wound oozing and wound haematoma, none of them needed any operative revision. By delaying the postoperative start to 10 hours after surgery, these wound related problems did not occur any more, probably because of respecting the primary hemostasis.

Date: 2012-11-30

Session: Miscellaneous: Thromboprophylaxis

Time: 16:00 - 18:00

Room: Maktoum C

Abstract no.: 31024

ASPIRIN VERSUS LOW MOLECULAR WEIGHT HEPARIN FOR EXTENDED VENOUS THROMBOEMBOLISM PROPHYLAXIS FOLLOWING TOTAL HIP ARTHROPLASTY: A DOUBLE-BLIND RANDOMIZED CONTROLLED TRIAL (THE EPCAT STUDY)

Ahmed ALGHAMDI¹, David R. ANDERSON², Michael DUNBAR³, Eric R. Bohm ERIC R. BOHM⁴, Etienne Belzile ETIENNE BELZILE⁵, Susan R. KAHN⁶, David ZUKOR⁶, William FISHER⁶, Wade GOFTON⁷, Peter GROSS⁸, Stephane PELET⁵, Mark CROWTHER⁹, Steven Macdonald STEVEN MACDONALD¹⁰, Paul KIM⁷, Susan PLEASANCE², Nicki DAVIS¹¹, Pantelis ANDREOU¹², Philip WELLS⁷, Michael KOVACS¹⁰, Marc A. RODGER⁷, Tim RAMSAY⁷, Marc CARRIER⁷, Pascal André VENDITTOLI¹³

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Introduction:Following total hip arthroplasty(THA)venous thromboembolism risk remains elevated for weeks. However, whether this risk warrants the cost and side effects of anticoagulant therapy for long after hospital discharge is controversial.We sought to determine if prolonged prophylaxis with aspirin was as effective as low molecular weight heparin for the prevention of symptomatic venous thromboembolism followingTHA.**Methods:**Multicenter(n=12)double-blind,double-dummy,randomized controlled trial with a non-inferiority design comparing a 28 days of the low molecular weight heparin(dalteparin 5000 units)administered subcutaneously once daily to oral aspirin (81 mg)once daily after patients had initially received 10 days of dalteparin prophylaxis,following elective THA.The study was halted prematurely as recommended by the Data Safety Monitoring Board given the primary study objective of non-inferiority had been achieved.**Results:**Of 2080 eligible patients,786 consenting patients were randomized,and 778 patients were included in the intention-to-treat analysis.The mean patient age was 57.7 years, 341(44%) were women.Five of 398(1.3%) dalteparin-group and 1/380 (0.3%)aspirin-group experienced a symptomatic venous thromboembolic event (1% absolute difference; 95% CI -0.5% to 2.5%). Aspirin was found to be non-inferior(P < 0.0001)but not superior(P = 0.22)to dalteparin for the prevention of venous thromboembolism.Clinically important bleeding complications occurred in 5(1.3%)of

dalteparin-group and 2(0.5%)of aspirin-group(P= NS).One death(0.3%)unrelated to venous thromboembolism occurred in dalteparin-group. Conclusions. Extended prophylaxis for 28 days with aspirin was at least as effective and safe as dalteparin for the prevention of venous thromboembolism following THA in patients who initially received 10 days of dalteparin prophylaxis.Given its low cost and greater convenience, aspirin may be considered the treatment of choice for extended prophylaxis following THA.

Date: 2012-11-30

Session: Miscellaneous: Thromboprophylaxis

Time: 16:00 - 18:00

Room: Maktoum C

Abstract no.: 33042

VENOUS THROMBOEMBOLISM (VTE) FOLLOWING FOOT SURGERY - NHS TAYSIDE DATA.

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Venous thromboembolic events are well-recognised post operative complication following major orthopaedic surgery and associated with potentially fatal outcomes. However, the data available in literature on VTE prophylaxis following foot surgery is very limited. We aim to evaluate our clinical practice for DVT prophylaxis following foot (first metatarsal) osteotomies, fusion of toes and tenotomies for claw deformity corrections. Patients undergoing metatarsal osteotomies, tenotomies, metatarsal-phalangeal fusions and claw foot deformity corrections in years 2010 and 2011 were included in study. Total patients selected were 65 (males 04, females 61) who were operated by a single surgeon. The mean age of patients was 51.5 years (range: 17-72 years). All patients were kept overnight for application of plaster boot and check x-rays on the next day. No thromboprophylaxis was given except to those with high risk e.g. previous DVT. On searching the data and patients records including ultrasound reports, no single post-operative thromboembolic event was identified within 90 days ($P < 0.001$). Therefore our study reiterates the view that venous thromboembolic events following foot surgery is extremely rare, and confirms to the national data that routine prophylaxis is not warranted. On Literature search, risk factors for venous thromboembolic events following foot surgery included the postoperative immobilization ($p=0.053$), hindfoot surgery ($p=0.02$), increased tourniquet time ($p=0.03$), and advancing age ($p=0.051$)^{1,2}. However the events of DVT and deaths following foot surgery were extremely rare. We recommend VTE risk assessment for each individual patients undergoing foot surgery.

Date: 2012-11-30

Session: Miscellaneous: Thromboprophylaxis

Time: 16:00 - 18:00

Room: Maktoum C

Abstract no.: 32413

VENOUS THROMBOEMBOLISM (VTE) IN THE CAST IMMOBILISED: A REVIEW OF ALL VTE EVENTS IN THE CAST IMMOBILISED OVER FIVE YEARS IN A DISTRICT GENERAL HOSPITAL

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Introduction: Venous thromboembolism is thought to account for 24,000 deaths/year in hospitals in the United Kingdom (UK). It is currently unclear how many patients in the UK undergo cast immobilisation for lower limb injury. Methods: We present 64 months of prospectively collected Root Cause Analysis (RCA) data for all VTE events from approx. 5,504 cast immobilised patients our hospital Trust from November 2005- March 2011. Personal demographics, diagnosis and adjusted VTE risk factors were collected. There were no exclusion criteria. Results: 11 clinically significant VTE events occurred during the period reviewed. This was an incidence of slightly over 2 events/year with a frequency of $\approx 1/500$. There was 1/11 pulmonary embolus, 5/11 above knee Deep Vein Thromboses (DVT), and 5/11 below knee DVT. 7/11 patients were female, average age at diagnosis was 45.5 years and 7/11 had sustained a lower limb fracture. Only 4/11 were admitted to our unit, and 2/11 required operative surgery. One patient was deemed medically unfit for surgery as a direct result of their VTE event. 2/11 had immediate family history of VTE, with 1/11 having a personal medical history of VTE. Retrospective classification using the NICE criteria would have deemed 10/11 as 'high risk'. Discussion: Clinically significant VTE is not uncommon in the cast immobilised population; its consequences are significant for both patient and healthcare provider. Conclusion: More research needs to be urgently conducted in this neglected area of medical science.

Date: 2012-11-30

Session: Miscellaneous: Thromboprophylaxis

Time: 16:00 - 18:00

Room: Maktoum C

Abstract no.: 32417

VENOUS THROMBOEMBOLISM (VTE) PROPHYLAXIS IN CAST IMMOBILISED PATIENTS: IS PREVENTION MORE COST EFFECTIVE THAN CURE?

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Background: VTE is responsible for 25,000 hospital deaths in the United Kingdom annually. Orthopaedic surgery and cast immobilisation are independent risk factors for VTE. There are no currently agreed guidelines on risk stratification and subsequent treatment for limb immobilised patients. The potentially significant financial cost of prophylaxis has not been established. Methods: A structured proforma was constructed with Research Governance Committee approval. Data from one hundred patients who had undergone primary lower limb immobilisation were prospectively collected. Personal demographics, diagnosis and adjusted VTE risk factors were collected. There were no exclusion criteria. An established NHS decision tree model determined the cost of VTE prophylaxis, diagnosis, treatment and long term complications. Probabilities of complications were estimated from the Cochrane database. Incremental cost-effectiveness ratios (ICER) were calculated to estimate the cost per VTE averted, and cost per quality-adjusted life year (QALY) gained with the use of enoxaparin thromboprophylaxis. Results: 46/100 patients qualified for prophylaxis based on NICE risk stratification protocols. This number of patients would incur a prophylaxis cost of £9113.52, but potentially saves £3617.44 in direct VTE diagnosis and treatment and £19,847.10 in long term costs. This resulted in a cost per VTE averted of £3338.10 and cost per QALY of £9623.58. Conclusions: There are substantial cost implications in treating cast immobilised patients with prophylactic enoxaparin, however this intervention may be cost effective in the long term. Using a more selective risk stratification tool may act to reduce direct prophylaxis costs and increase short term cost effectiveness.

Date: 2012-11-30

Session: Miscellaneous: Thromboprophylaxis

Time: 16:00 - 18:00

Room: Maktoum C

Abstract no.: 31714

ANTI EMBOLISM STOCKINGS: IS THERE ANY BENEFIT? A REVIEW OF THE EVIDENCE

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Introduction: NICE published guidelines in 2010 recommending mechanical prophylaxis combined with a pharmacological agent to reduce the risk of VTE in the majority of patients undergoing Orthopaedic surgery. There is increasing evidence that pharmacological agents have little effect on reducing symptomatic or fatal VTE. It therefore follows that the same can be said for anti-embolic stockings (AES). Aim: To assess whether AES offer additional reduction in VTE in patients undergoing orthopaedic surgery when used in conjunction with a pharmacological agent recommended by NICE. Method: We performed a meta-analysis looking into the additive benefit of AES with pharmacological thromboprophylaxis using a MEDLINE search. Articles were excluded if they were non-orthopaedic or did not utilise any of the NICE recommended pharmacological agents. Results: After exclusions 4 studies were included in the analysis, including 1,171 patients (587 pharmacological only, 584 combination). The number of patients treated with a pharmacological agent alone sustaining either symptomatic or asymptomatic DVT was 41 (6.9%) compared to 27 (4.6%) in those treated with combination therapy. This was not statistically significant ($p=0.1038$). The number of patients treated with a pharmacological agent alone sustaining a PE (symptomatic or asymptomatic) was 7 (1.2%), compared to 9 (1.5%) in the combination group. This was not statistically significant ($P=0.4514$). There were no reported deaths from VTE. Conclusion: Adding AES to pharmacological antithrombotic agents recommended by NICE does not appear to confer any additional benefit in reducing the incidence of DVT / PE or VTE related mortality in orthopaedic patients.

Date: 2012-11-30
Session: Foot & Ankle: Trauma I
Time: 08:30 - 10:00
Room: Maktoum D

Abstract no.: 31610

ARTHROSCOPIC ASSISTED OSTEOSYNTHESIS OF THE CALCANEAL FRACTURE

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Introduction : Authors present their experiences with arthroscopic assisted osteosynthesis of intraarticular dislocated fractures of the calcaneus. Materials and Methods: Intraarticular dislocated calcaneal fracture is big therapeutic problem. Large swelling with soft tissue damage, articular surface dislocation, axis angulation, comminution and body weight joint are critical points for therapeutic forethought. Restoration of articular surface and shape of bone without soft tissue healing problem is the deal of our therapy. Combination of the arthroscopic view and X ray imagine gives a very good view on the most important articular part of the calcaneus. The authors start therapy with reposition of the articular surface followed with stabilisation to the body of the calcaneus by 4-6 screws with washers. Results : In 1/2007 -10/2011 authors treated 115 calcaneal fractures. Miniopen and arthroscopic osteosynthesis were used in 39 patients in time 0-9 days after injury, usually 5-7 days, All patients were healed with no complications like soft tissue problems or inflammation. This method successfully restored articular surface, calcaneal height and partially restored calcaneal width and Böhler angle (average, 22°). Range of movement was 83 % of normal in the sagittal ankle plane. All patients returned to their previous level of work, 32 % of them with light pain after all day activity. Conclusions : Authors suggest this method in cases of the intraarticular fracture with small dislocation and slight comminution, where is not necessary plate fixation.

Date: 2012-11-30
Session: Foot & Ankle: Trauma I
Time: 08:30 - 10:00
Room: Maktoum D

Abstract no.: 31428

LIFE AFTER 1ST MTPJ ARTHRODESIS – DR SCHOLL VS MANOLO BLAHNIK?

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Aim: We conducted a study to evaluate if 1st metacarpophalangeal arthrodesis in neutral position has any affect on ability of patient to wear types of shoes postoperatively. To our knowledge this is the first study to lifestyle after plantigrade 1st MTPJ arthrodesis. **Material and Methods:** We conducted a prospective study involving 28 patients (18 females, 10 males). All patients had 1st MTPJ arthrodesis for hallux rigidus. All surgeries were performed by a single surgeon and joint was fused in neutral plantigrade position. Patients were then followed up to a year to see if arthrodesis has resulted in any restriction in choice of footwear in day to activities. **Results:** Out of 18 women, 12 (67%) were able to wear at least a 2 inch (5 cm) heel comfortably. Six female patients (23%) wore mainly flat shoes but this was predominantly due the presence of hallux rigidus in contralateral side. All men interviewed wore a wide range of different comfortable shoes and felt not restricted for choice of shoes in day to day life. Hence, overall 22 patients (78%) had very minimal restriction in choice of shoes after 1st MTPJ arthrodesis in plantigrade position. **Conclusions:** 1st MTPJ arthrodesis in neutral does not restrict the choice of shoes/heels postoperatively. Our study findings might further strengthen the argument in favour of arthrodesis instead of joint replacement for hallux rigidus.

Date: 2012-11-30
Session: Foot & Ankle: Trauma I
Time: 08:30 - 10:00
Room: Maktoum D

Abstract no.: 31735

LONG TERM OUTCOME OF TIGHTROPE FIXATION FOR SYNDESMOSIS INJURY

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Introduction. Tightrope fixation device (Arthrex) has been reported to be a safe and satisfactory method for treatment for syndesmosis injury. However, no long term outcome of patient with tightrope fixation has been published. Objective. To investigate the long term outcome of patient with tightrope fixation regarding subjective and objective outcome of the injury. Patients and Methods. All patients previously treated with tightrope fixation for syndesmoses injury was identified from our fracture database. Demographic data, injury profile, date of surgery, number of tightrope used and complications related to the tightrope use. Only patients with at least 1 year post fixation was included. All patients had radiograph of the ankle (mortice/lateral view) at the time of assessment. All patients were assessed clinically and AOFAS hindfoot score was used for functional assessment. Results. 64 patients were included in the study. Mean age was 34.5 (median 32). Male to female ratio was 3:1. Mean follow up duration was 6.2 years. 8 had their tightrope removed. Removal due to infection was 3. Others due to prominence of the knot stack over the distal fibula. No radiographic evidence of widening of ankle mortice or distal tibiofibula joint in patients with or without tightrope removal. Mean AOFAS hindfoot score was 96 (median 100). Summary. No long term problem was identified where the tightrope was left in situ. Main complaint was the prominence of knot stack. Use of Tightrope fixation is safe with no evidence of long term problems associated with it usage

Date: 2012-11-30
Session: Foot & Ankle: Trauma I
Time: 08:30 - 10:00
Room: Maktoum D

Abstract no.: 32558

SYNDESMOTIC INJURIES AND ANKLE ARTHRITIS TREATED WITHOUT FUSION OR ARTHROPLASTY

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Introduction: Distal tibio fibular syndesmotic injuries are difficult to diagnose clinically and requires a high degree of awareness. This paper lays down standard radiologic indices for diagnosis of syndesmotic injuries, corelates development of late ankle osteo arthritis in cases of old untreated syndesmotic injuries, discusses treatment avenues open to us and details suture button technique in these cases with their results. Methods: A total of 26 ankle arthritis cases with old untreated syndesmotic injuries were studied. All our patients had low AOFAS score due to chronic pain, syndesmotic instability with or without valgus and an arthrosis grading of more than 1 as per Magnusson classification of 1944. All cases with fresh trauma, obvious supramalleolar malalignment and charcot arthropathy were excluded from study. This research was to find an alternative treatment of ankle arthritis, define clinical, radiographic and functional outcomes and go in to the depth of suture anchor as a device to hold the ankle in realigned position. Results: The outcome variables were the AOFAS score for clinical evaluation, quality of life evaluation as per HRQOL index, anatomical evaluation through radiographic indices and post operative incident free status. Evaluation of the preop and mean post op AOFAS score shows remarkable improvement in clinical status. Radiographic indices also show return of parameters to a near normal status although talocrural angle remained marginally high. Conclusion: Study shows restoration of tibiofibular syndesmosis and realigning the ankle improves, delays or prevent need of more extensive procedures. Moreover simple suture anchor device is handy for retaining realignment and early weight bearing.

Date: 2012-11-30
Session: Foot & Ankle: Trauma I
Time: 08:30 - 10:00
Room: Maktoum D

Abstract no.: 31339

EVALUATION OF TIGHTROPE FIXATION IN PATIENTS WITH ANKLE SYNDESOMSIS INJURY

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Introduction: Ankle injuries are amongst the commonest of bone and joint injuries. For years, injuries involving ligaments fixing the tibia to the fibula have been treated using syndesmotic metal screws to prevent diastasis. However, the use of screws meant that physiological micro-movement between the tibia and fibula is lost and often results in loosening and breaking of the screws. TightRope Fixation is a new technique that has been developed to overcome these complications and allow some degree of flexibility similar to that offered by natural ligaments. As with any novel technique, multicenter long term follow up is required to ascertain safety and efficacy. Our aim was to conduct a large study evaluating the complication rate experienced with using TightRope fixation of the ankle syndesmosis in unstable injuries. Subjects and methods: We conducted a retrospective study reviewing all clinical records of cases of patients with injuries of the distal tibiofibular syndesmosis treated with the Ankle TightRope (Arthrex, Inc.) in our institution between January 2008 and January 2011. Results: A total of 43 patients were reviewed. We encountered 5 cases with complications (12%). Of those: three required removals due to prominent knot, one soft-tissue irritation and one with uncomplicated wound infection. Discussion: Our study, the largest so far evaluating complications of TightRope fixation, demonstrates that 1 in 8 patients treated with TightRope may experience complications.

Date: 2012-11-30
Session: Foot & Ankle: Trauma I
Time: 08:30 - 10:00
Room: Maktoum D

Abstract no.: 32130

OPTIMAL TIMING FOR SYNDESMOTIC SCREW REMOVAL – A STUDY BY RADIOLOGICAL ASSESSMENT.

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Objective: To compare the radiological outcome of syndesmotic injuries of ankle following the syndesmotic screw removal before and after eight weeks. Methods: Between 2006 and 2009, 108 patients underwent syndesmotic screw fixation following ankle injuries. Of these 57 patients (with radiographs after the screw removal) were included in our study. Twenty eight patients (Group A) had the syndesmotic screw removed before 8 weeks. The remaining 29 patients (Group B) had the screws removed after 8 weeks. The radiographs were assessed by two observers independently for tibiofibular overlap in both the periods after surgical fixation and after screw removal. Results: The mean age of the patients was 39 in Group A and 45 in Group B ($p=0.16$). Forty six percent are males in Group A compared to 60% in Group B ($p=0.93$). Twenty eight patients (96.6%) in Group B had good tibiofibular overlap compared to 22 patients (79%) in Group A. This is statistically significant at the conventional level of 0.05, using a 2-sided test. Conclusion: Our study indicates that Group B had a better outcome compared to Group A. We conclude that based on the radiological outcome, optimal timing for syndesmotic screw removal is more than eight weeks.

Date: 2012-11-30
Session: Foot & Ankle: Trauma I
Time: 08:30 - 10:00
Room: Maktoum D

Abstract no.: 31955

**OPEN REDUCTION SEVERELY DISLOCATED HIGH-ENERGY
CALCANEAL FRACTURES**

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(BELARUS)

Background: Open reduction is a good standard option in intra-articular calcaneal fractures, but treatment of multifragmental, severely dislocated fractures remains controversial. Cast immobilization, closed or minimally invasive reduction using different tools, open reduction & primary arthodesis in some cases don't permit to gain success. So conventional open reduction is to be performed. Materials & Methods: We retrospectively analysed one hundred three patients with one hundred thirty three intra-articular calcaneal fractures managed in our hospital between march 2005 and July 2011. The mean age was $34,7 \pm 4,62$ years. In 25 cases severely dislocated calcaneal fractures with subluxation in subtalar joint were seen. According to Sanders there were type 3AB - 9 cases, 3AC – 8, 3BC – 6, type 4- – 2. ORIF using plates, screws or wires through extended lateral or tarsal approach was performed in 11 cases (9 patients). Results: Postoperative wound problems included 2 cases of superficial skin necrosis. Outcomes were assessed in terms from 6 month to 2 years. Quality of reduction was good in 6 cases, satisfactory in 4 and poor in 1 cases. Resection of the plantar ossifications were required in 3 cases. Average Maryland foot score was $81 \pm 7,25$. Degree of the arthrosis in 3 patients was severe, but minimally symptomatic, in last patients there was moderate or little degree of the arthrosis. Conclusion: conventional open reduction and internal fixation is one of the options in treatment of severely dislocated high-energy calcaneal fractures with subluxation in subtalar joint with acceptable wound problems rates and satisfactory outcomes.

Date: 2012-11-30
Session: Foot & Ankle: Trauma I
Time: 08:30 - 10:00
Room: Maktoum D

Abstract no.: 32379

OPEN REDUCTION & INTERNAL FIXATION WITH CORTICO CANCELLOUS BONE GRAFTING FOR DEPRESSED INTRA ARTICULAR CALCANEAL FRACTURES.

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Background: Controversy exists between conservative and operative treatment of calcaneal fractures. Recent literatures advocates internal fixation for depressed intra-articular calcaneal fractures. The purpose of this study was to evaluate the outcomes of open reduction & internal fixation with cortico cancellous bone grafting for depressed intra articular calcaneal fractures. Methods: Thirty patients (36 fractures) of depressed intra articular calcaneal fractures underwent open reduction & internal fixation with autogenous cortico cancellous bone grafting between 2007 and 2011. All patients had a preoperative AP, lateral and axial radiographs. CT scan with 3D reconstruction was done for most patients for surgical planning & classification. All patients were operated using standard lateral approach and a precontoured locking calcaneal plate was used. The patients were evaluated by the American Orthopaedic Foot & Ankle Society (AOFAS) score, calcaneal fracture score and Foot Function Index at the final follow-up. Pre-operative & final follow-up radiographs were used to assess the change in the Bohlers and Gissanes angle. Results: The average follow-up was 2 years (6 months to 4 years). None of the patient was lost to followup. The mean adjusted AOFAS score was 64. The mean calcaneal fracture score was 66. The mean Foot Function Index was 24. There was significant improvement in the Bohlers and Gissanes angle. Wound dehiscence & superficial infection were seen in two patients & one patient has subtalar arthrosis. Conclusions: Outcomes of internal fixation for depressed intra-articular calcaneal fracture is good. Operative intervention appears to be a reasonable option for these fractures.

Date: 2012-11-30
Session: Foot & Ankle: Trauma I
Time: 08:30 - 10:00
Room: Maktoum D

Abstract no.: 33039

FACTORS INFLUENCING THE FUNCTIONAL RESULT OF ADULT MALLEOLAR FRACTURES AFTER OPEN REDUCTION AND INTERNAL FIXATION

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Material: Retrospective study of surgically managed consecutive malleolar fractures operated between 2005 e 2007. Methods: Clinical interview. Fracture classification according to Danis-Weber and anatomical (Henderson) classification systems. Statistical analysis. Results and Discussion: The total number of fractures comprised 163, there were 126 available for follow-up. 71 patients were female, the average age was 48. The average follow-up was 46.4 months (minimum 30 months). There were 12 postoperative infections, 5 cases of marginal wound necrosis, 4 patients with persistent pain, 2 cases of deep vein thrombosis, 2 cases of hypoesthesia in the territory of the superficial peroneal nerve, 1 case of delayed union and 1 case of revision osteosynthesis. In 44 patients the osteosynthesis material was removed. The average AOFAS score was 89 (minimum 24). There was a statistically significant correlation between increasing age and infection and between increasing age and number of malleolous fractured. Interestingly, there was no statistically significant correlation between age and the final AOFAS score, but the correlation between the AOFAS score and the number of malleolous fractured achieved statistical significance. Patient age and the AOFAS score didn't significantly correlate with the Danis-Weber classification. The correlation between the AOFAs score vs comorbidities, AOFAS score vs open fracture/fracture dislocation and AOFAS score vs complications failed to achieve statistical significance probably because of the low number of cases. There was no statistical correlation between the AOFAS score and follow up time, but there was a statistically significant correlation between the AOFAS score and removal of osteosynthesis material.

Date: 2012-11-30
Session: Foot & Ankle: Trauma II
Time: 10:30 - 12:00
Room: Maktoum D

Abstract no.: 32466

**5YEAR RETROSPECTIVE ANALYSIS OF VENOUSTHROMBOEMBOLISM
IN OPERATIVELY MANAGED ANKLE FRACTURES - THE CASE AGAINST
PHARMACOLOGICAL PROPHYLAXIS**

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Venous thromboembolism (VTE) represents a major cause of morbidity, mortality and financial burden to the NHS. Acquired risk factors are well documented, including immobilisation, lower limb plaster cast and surgery. NICE guidance on VTE prophylaxis within orthopaedic surgery currently excludes ankle ORIF. Aims: To ascertain the local incidence of VTE; compare our local VTE rates with published data from other institutions; review guidelines and other hospitals policies for thromboprophylaxis in ankle fractures; formulate a local policy for VTE prophylaxis. Method: Retrospective analysis of records of all patients undergoing ankle ORIF in our hospital over a continuous 5 year period, identifying cases of VTE, individual risk factors and surgical duration. Results: 380 patients underwent ankle ORIF; 3 developed VTE; no mortality. VTE incidence 0.79% (0.26%DVT; 0.53%PE). Operative duration 88+/-34mins (mean+/- 1S.D); in those with VTE, duration was 35, 90&85min. There is no statistically significant difference (p=0.18) observed between our local and national VTE incidence rates. Operative duration was not a significant factor in those developing VTE. Additional risk factors were identified in one patient with VTE . Discussion: The incidence of heparin induced thrombocytopenia is 0.5%, its associated mortality 10% (i.e. 1:2000). To prevent one fatal PE in foot & ankle surgery, 10,000 must receive VTE prophylaxis. Therefore, heparin associated mortality exceeds VTE associated mortality in foot & ankle surgery. Conclusion: Our local VTE rates are comparable to national rates. Risk of pharmacological prophylaxis exceeds benefit; therefore routine use not justified. Individual risk should be assessed; higher risk patients may benefit.

Date: 2012-11-30
Session: Foot & Ankle: Trauma II
Time: 10:30 - 12:00
Room: Maktoum D

Abstract no.: 31370

RISK OF AMPUTATION IN PATIENTS WITH DIABETIC FOOT ULCERS.

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Introduction: People with a diabetic foot ulcer are at high risk for amputation. Some of the risk factors for developing an ulcer are also predictors for subsequent amputation. Our aim was to find risk factors for amputation in patients presenting with a foot ulcer at our department to develop a prediction model for amputation in patients with a diabetic foot ulcer. Materials and methods: All incident foot ulcers presented between 2007 and 2009 at our multidisciplinary diabetic foot clinic were analyzed. We used amputation as endpoint, taking the level of amputation also into account. Risk factors were recorded and a multivariate logistic regression analysis with amputation as endpoint was computed. Kreatinin levels were log-transformed, the other predictors are either continuous or dichotomous. Results: From the 113 new foot ulcers which were treated, 26 underwent an amputation (15 only one or more toes, 2 transmetarsal, 8 below knee and 1 above knee). The age at amputation was higher for the non insulin dependent group (66 versus 54 years $P = 0.03$) although the time since diagnosis was lower for this group (17 versus 35 years $p < 0.001$). In the univariate logistic regression analysis gender (OR=2), type of diabetes (OR=1.8) logkreat (OR= 2) and ulcus in history were associated with amputation. When we do two separate analyses for gender, the most important finding is an OR of 8.4 for IDDM for women as compared to 0.8 for men. For men we found a strong association for (log)kreatinin, but not for women.

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Abstract no.: 32740

ANTERIOR TRANSFER OF TIBIALIS POSTERIOR AND FLEXOR DIGITORUM LONGUS IN CASES OF COMPLETE COMMON PERONEAL NERVE PALSY

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Introduction: Common peroneal nerve palsy has been reported to be the most frequent lower extremity palsy characterized by a supinated equinovarus foot deformity. Anterior transfer of the tibialis posterior tendon through the interosseous membrane and fixation to the lateral cuneiform represents the gold standard surgical procedure for these cases. However, the length of the tibialis posterior tendon is usually insufficient, preventing easy tendon to bone insertion. Patients and methods: Using four limited incisions, five patients with complete common peroneal nerve palsy underwent anterior transfer of the tibialis posterior tendon through the interosseous membrane, and the tendon is then passed under the extensor retinaculum in the sheath of tibialis anterior tendon to be interweaved with the distally attached tibialis anterior tendon after being rerouted through an osseous tunnel in the cuneiform bones to have a new origin in the lateral cuneiform. Also the flexor digitorum longus is transferred anteriorly and sutured side to side to the extensor hallucis longus. Results: After a mean follow up of nine months, the subjective patient satisfaction was good or excellent in all patients. The maximum dorsiflexion was 0 degree in three patients and 1-5 degrees in two patients. The transferred tibialis posterior muscle power grading was three in four patients and four in one patient. Conclusion: This technique is a reliable option which provides an easy method to attach the transferred tibialis posterior tendon and to control its tension in an appropriate line of pull.

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Abstract no.: 32573

OSTEOCHONDRAL TRANSPLANTATION FOR TALAR OSTEOCHONDRAL LESIONS USING AN ANTERIOR TIBIAL WEDGE OSTEOTOMY: A PROSPECTIVE STUDY.

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Introduction: Osteochondral grafting is an excellent option in recalcitrant cases of osteochondral lesions of the talus and has been reported to give excellent results. Osteochondral grafts need to be placed perpendicular to the recipient site. This necessitates an adequate visualization and access to the lesion. We employ an anterior tibial wedge osteotomy to access the talar lesions. This study focuses on our experience with this method. **Materials and methods:** The study was conducted over past 4 years. 24 patients were included (19 males, 5 females). The mean period of follow-up was 30 months (range 6-47 months). All lesions were caused by trauma. **Procedure:** After diagnostic arthroscopy and joint debridement, anterior arthrotomy was performed. Projected bone block was marked to lie over the lesion and bone block was removed. With the ankle fully plantar flexed osteochondral plugs were inserted perpendicular to the recipient site. The osteotomised block was replaced anatomically and secured with screws. **Results:** All patients showed good to excellent pain relief and improved range of motion post-operatively. No patient required re-surgery for the original lesion. Preoperative AOFAS score yielded a mean of 54.2(36-61) points and improved by an average of 35.6 pts post-operatively. No complications were seen at the site of tibial bone wedge. No donor site morbidity was observed. Good graft incorporation was noted. **Conclusions.** Anterior tibial wedge osteotomy is an effective method to approach talar osteochondral lesions. It allows placement of the wedge directly on the location of the lesion.

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Abstract no.: 32320

PERCUTANEOUS VS OPEN MULTIPLE LONGITUDINAL TENOTOMIES OF THE TENDOACHILLES FOR THE TENDINOPATHY

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Introduction: Achilles tendinopathy (AT) is the most common over use syndrome of the lower limb. One of the simple operations performed for this condition is "Multiple longitudinal tenotomies" (percutaneous or open). We compared the outcome of percutaneous versus open method of longitudinal tenotomies for this condition. Methods and materials: It is retrospective study of patients operated for AT in our hospital from 1997 to 2011 a total of 43 patients. Twenty had percutaneous and 23 had open tenotomies. All of them had a trial of non-operative treatment prior to surgery. Data was collected from patient records and by telephonic questionnaire of the patients. Data collected includes pre and postoperative pain scores on a pain scale of 0-10, duration of symptoms, patient satisfaction scores (0-10) and complications. Results: In the percutaneous group the mean pre and postoperative pain scores were 8.79 and 2.07 (p value 0.000). in the open group the values were 8.65 and 1.75 (p value 0.000). The mean satisfaction scores in the percutaneous and open groups were 8.25 (range 3-10) and 8.14 (range 2-10) respectively. The patient satisfaction scores were not significantly different between the two groups (p value 0.942). Complications in the percutaneous group included one recurrence and no relief in one case. Complications in the open group were 2 superficial infections and one wound breakdown. Conclusions: Both methods of longitudinal tenotomies resulted in significant symptomatic relief and good patient satisfaction scores. Outcome of percutaneous method has an added advantage of less complications and simplicity of procedure.

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Abstract no.: 32363

A 2-11 YEAR RETROSPECTIVE STUDY OF PATIENTS WITH HAGLUND'S DEFORMITY OPERATED WITH A WEDGE OSTEOTOMY ON THE CALCANEUS

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Material: 41 patients with 48 feet, mean follow-up was 7 years (2-11y) 17 feet with heel pain and 31 feet with a heel prominence. 25 female; 16 men 18 of 48 feet had previously been operated with a failed resection plasty. All patients were examined retrospectively according to patient satisfaction (Makwana et al 1995), shoe problem and muscle strength in the calf, using a Cybex machine standard for muscle strength. Result: 37 feet was satisfied, 8 feet somewhat satisfied, 3 feet not satisfied 16 feet of 18 previously operated with resection plasty were satisfied. 38 of 48 feet had a shoe problem pre-op, 28 feet of 38 feet had a significant improvement of the shoe problem. 10 feet of 38 feet had the same problem as before the operation. Post-op complications: 2 of 12 osteotomies fixated with staples dislocated post-op. 3 of 36 osteotomies fixated with screws dislocated. 7 of 48 feet had a skin infection that healed uneventfully after treatment with antibiotics. No deep infections. No skin necrosis. 16 of 48 feet reported loss of sensory perception around the skin incision area at the follow-up. Conclusion: Wedge osteotomy is an alternative treatment of Haglund's deformity. Long time result is good and it's unusual with severe post-op complications. Wedge osteotomy is successful as a re-operation technique on previously operated and failed resection plasty.

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Abstract no.: 33159

COMPARATIVE STUDY BETWEEN ORIF AND LIMITED INTERNAL FIXATION WITH EXTERNAL FIXATION FOR CLOSED TIBIAL PLAFOND FRACTURES

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Introduction: Intra-articular fractures of the tibial plafond are complex injuries which continue to challenge orthopedic surgeons in achieving anatomic reduction, while allowing early weight bearing and return to activity. Methods: Between January 2009 and January 2011, 30 patients who were diagnosed with closed type II and III plafond fractures based on Rüedi and Allgöwer classification were treated surgically by either ORIF or External Fixator. Preoperatively, the patient was randomly allocated for treatment. The procedure to be performed was determined by the patient's number. The random method was that the odd numbers were allocated into group I and the even ones into group II. Group I including fifteen cases managed by limited internal fixation with external fixation and group II including fifteen cases managed by open reduction and internal fixation. The outcome measures included delayed union, nonunion, malunion, deep infection or hardware failure and ankle function. Results: The articular surface reduction was classified as good, fair and poor based on measured articular displacements, talar tilt, mortice widening. In the ORIF group the reduction was good in 10 fair in 3 and poor in 2. In the External Fixator group the reduction was good in 12 fair in 3 and poor in none. Conclusion: The reductions and final outcome obtained with the External Fixation group were comparable to those with ORIF.

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Abstract no.: 33013

NEGLECTED ACHILLES TENDON RUPTURES - MANAGEMENT WITH PERONEUS BREVIS AND FLEXOR HALLUCIS LONGUS TRANSFER

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Introduction: Tendoachilles despite being the strongest tendon in the body, is vulnerable to spontaneous rupture due to overload and local pathology. The difficulties in management of neglected ruptures makes it one of the challenging problems of present day orthopaedic practice. Methods: We have treated 75 patients with neglected tendoachilles ruptures in Government General Hospital, Kurnool, India, with Peroneal transfer in 28, modified FHL transfer in 42 and direct suture in 5 patients. 42 patients had achillodynia and 74% of them had local steroid infiltration. 71% of the ruptures occurred in hypovascular Zone II and in 25, repair was after 3 weeks, graded as late (Englis). The patients were managed based on a standardized evaluation and surgical protocol. The technique of FHL transfer was simplified by anchoring the tendon in a vertical trans-calcaneal tunnel. The results were evaluated by Quigley's subjective assessment and 100 point scoring system of Juhana and Leppilahti. The follow up suggested that patients with FHL transfer showed significantly lower mean wound healing times and weight bearing times when compared with patients who had Peroneal transfer. We do not recommend direct suture of the tendon as the repair is in a zone of disturbed structural integrity leading to wound tension and associated complications. Flexor Hallucis Longus tendon, by virtue of its strength, anatomical location and geometry, apart from biomechanical advantages, poses the best replacement for Achilles tendon in old ruptures with gap., in comparison with Peroneus brevis transfer.

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Abstract no.: 32878

THE IMPORTANCE OF SOFT TISSUE CONDITIONS FOR FRACTURES OF THE TIBIAL PILON: ADVANTAGES OF A 2-STAGE

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OBJECTIVES: We used a two-staged treatment plan for 38 patients suffering from closed fractures of the distal lower limb between January 2005 and October 2009. **METHODS:** All patients received a joint immobilizing external fixator at the day of trauma. After consolidation of soft tissues at an average of 8,3 days after trauma and after planning surgery on the basis of native X-ray and CT-scan we performed open reduction and internal fixation with a multi directional locked-screwplate fixator. Nine cases without joint participation could be operated in a minimal invasive pattern. **RESULTS:** In 17 cases no reduction of Range Of Motion compared to the opposite side was recorded. Twenty one patients showed a moderate reduction. Four patients showed a reduction of ROM of up to two thirds. Bony consolidation was achieved in all cases. We performed early autologous bone graft due to delayed bony consolidation in two cases. We observed a direct correlation between n type of fracture and restriction of ROM and post traumatic arthritis. Eleven Patients with extra-articular fractures showed no restriction of ROM. Nineteen patients with a fracture involving the tibial pilon showed no or only mild post-traumatic arthritis of the ankle. **CONCLUSION:** Because results of surgical treatment of the tibial pilon depend on soft tissue condition at the time of trauma we recommend a two-staged surgical treatment plan with external fixation and secondary internal locked-plate osteosynthesis to reduce soft tissue complications and to achieve good functional results.

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Abstract no.: 31536

DORSAL PLATING VS. INTRA-ARTICULAR ORIF FOR ACUTE LISFRANC INJURIES

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INTRODUCTION: Lisfranc injuries can be the cause of significant morbidity. Anatomic reduction and internal fixation is recommended for unstable Lisfranc injury patterns. Even with anatomic reduction, patients can develop significant morbidity and the ideal surgical treatment remains controversial. Trans-articular screw fixation is currently the gold standard for surgical management of unstable Lisfranc injuries. A dorsal plate construct can theoretically achieve the same surgical objectives while preserving the joint articular surface and possibly decrease the long-term morbidity of this injury. This study presents clinical data of a prospective, randomized clinical trial comparing the two methods of internal fixation. **METHODS:** The study design is a prospective, randomized clinical trial using the AOFAS Midfoot score, radiographs, and the VAS pain score as the primary outcome measures. Randomization was achieved at the time of surgery to either screw fixation or dorsal plating. From June 2010 to present, 19 patients have qualified for inclusion with 10 in the trans-articular screw group and 9 in the dorsal plating group. **RESULTS:** In the dorsal plating group, patients had an AOFAS score of 90 and pain score of 2. In the screw group the AOFAS score was 83.3 and the pain score was 2.3. One patient in the dorsal plating group had loosening of one screw on radiographs this patient also demonstrated 1 mm widening after hardware removal. There are no other complications to date. **CONCLUSION:** The data trend suggests dorsal plating is equivalent in clinical outcome and maintenance of reduction in the short to medium-term.

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Session: Foot & Ankle: Non Traumatic

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Abstract no.: 32763

TOTAL ANKLE ARTHROPLASTY WITH AND WITHOUT ADDITIONAL CONCOMITANT PROCEDURES

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Recent ankle arthroplasties are succeeding in relieving pain and maintaining motion in patients with end-stage ankle arthritis, making arthroplasty a viable option in these patients. Additional concomitant procedures are sometimes needed for management of risk factors like malalignment, tight tendoachilles, and adjacent joint arthritis. However, few series in the literature have assessed the outcome of ankle arthroplasty with additional concomitant procedures. In this study, 47 patients underwent primary total ankle arthroplasty between January 2006 and January 2009. Fifteen patients needed additional concomitant procedures (group B) and 32 did not (group A). The patients were followed clinically and radiologically for up to 3 years (1 to 3 years, mean 1.64 years). The outcomes of patients without additional concomitant procedures (group A) were compared to the outcomes of patients with additional concomitant procedures (group B). In both groups, there was a significant improvement of the AOFAS score at 3 months and 1 year postoperatively. With the numbers available, no significant difference between the two groups was detected as regard the improvement of AOFAS score or the total range of motion at 3 months or at 1 year as compared to the preoperative values. The complication rate was comparable in both groups. All patients with preoperative talar varus tilt showed satisfactory alignment with no recurrence of the tilt. According to our short term study, any additional procedures indicated can be done safely concomitant with total ankle arthroplasty and this does not seem to worsen the outcome or increase the complication rate.

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Abstract no.: 32485

NONOPERATIVE MANAGEMENT OF FRACTURES OCCURRING DURING ANKLE ARTHROPLASTY

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Background: Intraoperative lateral or medial malleolus fracture is a common complication of total ankle arthroplasty. Conventional teaching is to perform open reduction and internal fixation for all intraoperative fractures, to ensure a stable ankle mortise. However, the increased risk of wound healing complications and infection is considerable. Non-operative management of intraoperative fractures is therefore an attractive option. Methods: Case records of patients undergoing non-operative management of malleolar fractures sustained during ankle arthroplasty between 2009 and 2011 were examined. Results: Three intraoperative fractures occurred during the study period, in two patients undergoing ankle arthroplasty for rheumatoid arthritis and one for post-traumatic arthritis. All three cases were transverse lateral malleolar fractures. Intraoperative stress radiographs demonstrated the ankle mortise to be stable in all cases. Fractures were treated in plaster, non-weight bearing, for 4-6 weeks before commencing protected weight bearing and range of motion exercises. At the time of writing, patients have been followed up to a mean of twelve months. All fractures reached clinical union by six weeks. No clinical or radiographic evidence of early loosening or wear of prostheses has been detected. Conclusion: Our experience suggests that, contrary to traditional teaching; stable malleolar fractures sustained during total ankle replacement can be safely managed with cast immobilisation. Long term follow up studies will determine whether outcomes are comparable to those of patients not sustaining intraoperative fracture, and those undergoing fixation of intraoperative fractures.

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Abstract no.: 32640

REVISION OF FAILED TAR TO FUSION

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Introduction We wish to report our results of the revision of failed TAR to fusion. **Patients and methods** Between July 2005 and February 2011 the senior author had performed 20 arthrodesis in 19 patients (13 male and 6 female) who had failed total ankle arthroplasty (TAR). Their mean age was 63.5 years. All of them had the AES total ankle replacement. (Biomet UK). The mean period from the original TAR to fusion was 51 months (6 to 72). The indication for revision of TAR to fusion was septic loosening in 4 patients and osteolysis and or aseptic loosening in 16 cases. Four type of fusion techniques were used . **Results** The mean follow-up was 15 months. 3 patients had tibiotalar arthrodeses with screws, 11 patients had fusion augmented with an Ilizarov frame, 2 patients had tibiocalcaneal fusion and 5 patients had tibiotalocalcaneal fusion with a hind foot nail. There was 2 non-union in the septic loosening group and 1 non-union in the aseptic group. The average time to fusion was 5 months and the frame was removed at an average of 17 weeks. The average shortening as a result of the fusion for the failed TAR was 1.5cms. **Conclusion** Our results were comparable to the previously published results. We recommend the use of tibiotalocalcaneal fusion with a hind foot nail in the presence of severe osteolysis or accompanying subtalar arthritis. In the presence of good bone stock an ankle fusion supplemented with a circular frame gives a good predicatble outcome.

Date: 2012-11-30

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Abstract no.: 32011

MINIMALLY INVASIVE CHEVRON OSTEOTOMY; FUNCTIONAL OUTCOME AND COMPARISON WITH OPEN CHEVRON OSTEOTOMY

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Aim: To evaluate the outcome of minimally invasive (MIS) chevron osteotomy in management of hallux valgus (HV), comparing the results with a matched cohort who had standard open chevron osteotomy. **Methods and Materials:** A retrospective study of 40 patients, 20 patients in the MIS group and 20 patients in the open group. Functional outcome was evaluated using the Manchester Oxford Foot and Ankle Questionnaire (MOXFQ). Radiologically, the inter-metatarsal angle (IMA) and hallux valgus angle (HVA), avascular necrosis (AVN) of metatarsal head, mal-union, non-union and over-correction were evaluated. Complications were recorded. **Results:** Both the MIS and open groups showed significant improvements in the MOXFQ, IMA and HVA. The median improvement between groups did not reach statistical significance. We had no cases of AVN, mal or non-union, over-correction or transfer metatarsalgia in either group. **Conclusion:** MIS procedure achieved satisfactory clinical and radiographic results similar to open surgical technique. It is at least as effective as the open surgical technique. Percutaneous hallux valgus surgery requires a learning curve which is not analysed in this present study. Randomised blinded Clinical trials are required to validate our findings.

Date: 2012-11-30
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Abstract no.: 32107

REPLACEMENT OF THE FIRST METATARSOPHALANGEAL JOINT USING A METALLIC HEMI-ARTHROPLASTY – A CASE SERIES WITH FUNCTIONAL OUTCOMES

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Introduction: There is a paucity of published studies reporting on the long-term outcomes following a first metatarsophalangeal joint (MTPJ) hemi-arthroplasty. The purpose of this study was to evaluate the functional outcomes following this procedure to determine whether it is a reliable option for the treatment of hallux rigidus in selected patients. Methods: Between 2008 and 2011 we implanted 84 metallic first MTPJ hemiarthroplasties using the BioPro implant (BioPro, Inc., Port Huron, MI) in 72 patients. The cohort included 19 men and 53 women with a mean age of 55.4 years (range 35 to 74 years). The subjective functional evaluation was based on the Manchester Oxford Foot questionnaire (MOXFQ) and the Short Form (SF) 12 patient satisfaction questionnaire. Results: At a minimum follow-up of 12.6 months (mean 20.5 months, range 12.6 to 42.2 months) 68 patients were available for follow up. One patient required a revision hemiarthroplasty and 2 patients were converted to an arthrodesis for ongoing pain. Complications included superficial wound infection in 7 patients which was treated successfully with antibiotics and one patient required an excision arthroplasty for chronic infection. There was a significant improvement in the MOXFQ score ($p < 0.001$) and both the physical and mental components of the SF12 scores ($p < 0.001$). Discussion: Based on these results the use of a metallic hemiarthroplasty can be considered a useful option for the treatment of hallux rigidus. Longer term follow-up and comparison with alternative techniques will be required to evaluate the true effectiveness of this surgical option.

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Abstract no.: 32148

THE METATARSAL AXIS DEVIATION (MAD) ANGLE, A NEW ANGLE TO MEASURE PRIMUS METATARSUS VARUS.

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Objective: Most treatment decisions in hallux valgus correction are based on the severity of the hallux valgus, which in turn is calculated using various angles. The inter-metatarsal angle is an important variable used to grade severity but this can underestimate the varus of first metatarsus when there is an element of forefoot adduction. Our study aimed to assess the first metatarsal varus as a deviation from the forefoot axis, which is being described for the first time as a measurable angle. This is useful in planning surgery.

Materials and methods: We prospectively studied 78 feet in 68 patients with symptomatic moderate to severe (HVA > 250) hallux valgus. This included 45 females and 23 males. 10 patients had bilateral deformities. The average HV (hallux valgus) angle was 35.52 deg. The average IMA (inter-metatarsal angle) was 14.38 deg. The MA (metatarsus adductus) angle was 25.87 deg. The (MAD) metatarsal axis deviation angle was 39.83 deg.

Conclusion: The severity of hallux valgus correlated much better with a metatarsal axis deviation angle than with the inter-metatarsal angle. We found the MAD angle took into consideration the forefoot adduction which contributes to first metatarsal varus. We recommend use of the metatarsal axis deviation angle as an additional tool to determine primus metatarsal varus and an angle above 30 deg, should be considered an upper limit and treatment planned accordingly.

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Abstract no.: 32026

MINIMALLY (MIS) CHEILECTOMY; FUNCTIONAL OUTCOME AND COMPARISON WITH OPEN CHEILECTOMY

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Introduction: Open cheilectomy is an established surgical treatment for hallux rigidus. Cheilectomy is now being performed using minimally invasive (MIS) techniques. In this prospective study we report the outcome of minimally invasive cheilectomy comparing the results with a matched group who had cheilectomy using standard open procedure. Methods: Prospective study of 47 patients. 22 patients had MIS cheilectomy between March 2009 and September 2010. We compared the outcome with another group (25 patients) who had open cheilectomy. Functional outcome was assessed using the Manchester Oxford Foot and ankle Questionnaire(MOXFQ). The MOXFQ is a validated questionnaire designed to be self-completed and used as an outcome measure for foot surgery. Patients' satisfaction and complications were recorded. Results: The median follow up was 11 months (IQR=4-23) in the MIS group and 17 months (IQR=9-27) in the open group. The metric score of the three domains of the MOXFQ showed statistical improvement in both groups. The improvement did not reach statistical significance between the open and MIS groups. There were three failures in the open group (Fusion) compared to none in the MIS group. Discussion: There was significant improvement in foot pain, function and social aspect in the MIS group in comparison to the open group. MIS cheilectomy is an effective alternative procedure with satisfactory functional outcome and high patient satisfaction. Results are comparable to the standard open cheilectomy with a lower apparent failure rate.

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Session: Foot & Ankle: Non Traumatic

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Abstract no.: 31020

ONE STAGE PANTALAR ARTHRODESIS – A STUDY OF 96 CASES

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OBJECTIVES:This paper is presented to show the results of one stage Pantalar Arthrodesis in stabilising and correcting a deformed & paralysed unstable foot..**MATERIAL:**The procedure was performed in 96 feet in 89 patients.The indications were 1.Flail feet with functional hip & knee (52 cases) 2.Calcaneus deformity (16 cases) 3.Equinus deformity(26cases)4 Foot drop following traumatic paraparesis 1 case5.PostVIC equines contracture following surgery for varicosities (1case). The age ranged from 13 to 48.5 yrs. with mean age of 16.5 yrs.64 were males and 32 were females.7 cases were operated for bilateral PTA. **METHOD:**All were operated by Kocher's approach extended with Ollier's approach.In 92 feet,correction of deformity and foot stabilisation was excellent improving the gait considerably. In 4 feet, mild to moderate deformity persist but good stability could be achieved even in deformed foot making patient ambulatory.**RESULTS:**In all ninety six except one feet, sound fusion could be achieved in 12 to 16 weeks.Only 1 case having residual foot drop following traumatic paraparesis is left with ankle pseudoarthrosis. No case of intertarsal pseudoarthrosis or AVN of Talus has been reported.Apart from minor complications viz.superficial marginal necrosis of wound edges and delayed wound healing there were no significant post-operative complications.**DISCUSSION:**This procedure gives stability to paralysed foot, corrects the foot deformity and increases weight-bearing capacity and thus helps in improving the gait considerably.This has made the patients ambulatory who were non-ambulatory before surgery. It has reduced the need for external support. Performance of the procedure in a single stage is advantageous without much complications.

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Abstract no.: 31135

SURGICAL TREATMENT OF FOOT DEFORMITIES IN PATIENTS WITH CHARCOT-MARIE ATROPHY BY ILIZAROV METHOD OF TRANSOSSEOUS OSTEOSYNTHESIS

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Management of patients with soft paralytic foot deformities secondary to hereditary neuromuscular diseases remains a topical problem of modern orthopaedics up to present time. Our hospital treated 184 patients (347 feet) from 1996 to 2011 with Charcot-Marie atrophy at the age from 9 to 53 years. Main foot deformities were equines-varus-adduction - in 244 cases (7.3%), equines-varus - in 82 cases (23.6%), calcaneus-varus - in 21 cases (6.1%). 163 patients (88.6%) had pathology of the both lower limbs. All patients were treated by method of transosseous osteosynthesis. The following surgical interventions were performed: triple foot fusion (with/without muscle transfer) was done in 103 patients, foot osteotomies (including those with muscle transfer) - in 38 patients, pan-arthrodesis of foot - in 8 patients, closed foot deformity correction (in children) - 35. Upon indications, along with deformity correction, foot lengthening was performed, including patients with bilateral pathology. Average distraction period in patients with foot osteotomies was 32 ± 2.3 days, when using lengthening arthrodesis 21 ± 3.1 days. Average fixation period in pan-arthrodesis patients was 62 ± 3.1 days, in patients with triple arthrodesis and muscular transfer - 53 ± 4.0 days, in foot osteotomies patients 56 ± 3.1 days. Complications, which occurred in 31 patients (16.8%) were corrected during treatment. Evaluation of treatment results was done using AOFAS scale. Most of short-term and long-term results were evaluated as excellent and good. Application of techniques of controlled transosseous osteosynthesis in management of these patients allows us to eliminate pain, correct deformity and lengthen the segment if necessary.

Date: 2012-11-30
Session: Shoulder & Elbow: Trauma II
Time: 16:30 - 18:00
Room: Maktoum D

Abstract no.: 33127

TREATMENT OF LATERAL EPICONDYLITIS AT THE ELBOW BY LATERAL EPICONDYLECTOMY

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Introduction: We had the opportunity to treat 120 patients with persistent lateral epicondylitis resistant to conservative treatment. 87 males and 33 females. The right side was affected in 84 and the left was affected in 36. The ages varied from 20-56 years. Industrial injuries were 92 and personal injuries was 28. Method: The skin incision is over the lateral epicondyle at the lateral aspect of the elbow following by incision the deep fascia and releasing of the origin of extensors. We perform debridement of bursa and thickened synovial fringes, following by removal of part of the lateral epicondyle and reattaching the origin of the extensors. Finally we close the skin. The follow up was from 1-20 years. Post operative treatment is as follows: 1. Posterior splint, 2. Active range of motion after two weeks and 3. Physiotherapy after three weeks. Results: 68% excellent, 22% good, 10% fair

Date: 2012-11-30
Session: Shoulder & Elbow: Trauma II
Time: 16:30 - 18:00
Room: Maktoum D

Abstract no.: 32975

ARTHROSCOPIC RELEASE OF RESISTANT STIFF ELBOW

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Introduction: Elbow stiffness represents a difficult therapeutic challenge. The complaints are classically characterized by pain and loss of motion. Treatment options include non-operative and operative techniques, all attempting to provide pain relief and restoration of function. If nonsurgical treatment fails, operative intervention is indicated. Treatment of the stiff elbow by arthroscopic capsular release is a relatively new and effective procedure; however, the surgery is technically demanding. The aim of this study was to evaluate the results of treating post-traumatic elbow stiffness by arthroscopic arthrolysis followed by early active motion of the elbow. Methods: Twenty patients with elbow stiffness were treated by arthroscopic capsular release through anterolateral and anteromedial elbow portals, using arthroscopic ablation device and shaver. Posterior and posterolateral portals were used to removal loose bodies, debris or scar tissue in the olecranon fossa. The patients were prospectively followed up clinically for a mean of 24 months (range, 16-30 months). The clinical assessment was performed with the Mayo Elbow Performance score. Results: Eighteen patients have been satisfied with the outcome. There was significant improvement in the range of motion as well as reduction of pain. The mean Mayo Elbow Performance score was significantly improved from a mean of 45.3 preoperatively to 95.3 postoperatively. Conclusion: The preliminary results with the arthroscopic release of resistant stiff elbow are encouraging and provide symptomatic improvement in most patients. It shortens the time to achieve a good function.

Date: 2012-11-30
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Abstract no.: 30753

CORONAL SHEAR FRACTURES OF DISTAL HUMERUS- THE CAPITELLUM AND TROCHLEA: FUNCTIONAL OUTCOME AFTER OPEN REDUCTION AND INTERNAL FIXATION WITH HERBERT SCREWS

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Background: coronal shear fracture of the distal humerus, namely capitellum and the trochlea are sustained by direct trauma to the elbow. Trochlear fractures are rare. Debate lies in whether to excise or fix them. Results of recent studies show that fixation leads to better function. Excision of fragments leads to stiffness, arthrosis, instability and elbow pain. We present long term results after fixation of these fractures. Methods: Eighteen patients age 16 to 50 yrs with coronal fractures of capitulum(15), isolated trochlea(1) & 2 combined(capitello-trochlear) fragments were fixed with Herbert screws/k wire. All patients were operated using Kaplan approach. Fragments were reduced, fixed provisionally with k wires and later stabilised with Herbert screws. Active & assisted Motion was started 2nd post op day. All patients were followed for min of 2 years. Av 3.6 years. Mayo Elbow performance score (90 points) was recorded to evaluate results. Results: All patients had union. There were no implant failures. Excellent results were seen in 12, good in 4 patients and satisfactory results in 2. One had poor range of motion due to heterotopic bone formation. The new bone was excised to achieve good range of motion. Pin palsy in one, which recovered later. Nonunion, implant failure, stiff elbow, instability, avn of capitulum/trochlea, arthrosis were not seen in our series. Range of motion was av 10 degree to 130 degree. Conclusion: fixation of these fractures has shown excellent results. The world literature supports our series. These are rare and complex injuries that need high degree of surgical skills and long term follow-up.

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Abstract no.: 30758

FUNCTIONAL OUTCOME AFTER MINIPLATE OSTEOSYNTHESIS FOR RADIAL HEAD AND NECK FRACTURES.

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Fixation of the radial head and neck fractures has been controversial. Evidence based studies have proven the role of radial head fixation & preservation in the stability of elbow. The study aims to assess functional outcome after miniplate fixation for radial head /neck fractures. Materials and methods: It was a prospective study conducted in 18 patients who presented with radial head/neck fractures between age group 20-60 with a mean follow up 30 months(11-48). Six patients had mason II, 10 had Mason III and two had Mason IV. Patients >60 yrs, comminuted fractures and fractures more than 4weeks old were excluded. Kaplan approach was used in all patients. Fragments were reduced and temporarily stabilised using k wires. Radial head fragments were stabilised using 1.2 mm screws and the construct was then stabilised to the radial shaft using single 2mm Miniplate. The miniplate was applied in the Hotchkiss safe zone so that the rotatory movements were not restricted. Results: were evaluated using Mayo elbow performance score (90 points). Function, Pain, motion and stability were assessed. Early active mobilisation was started from the second day. Range of motion was average 10 to 130 degrees of flexion extension. Rotation was well between functional range. Complications seen were improper reduction (1) implant failure secondary to non union (1) and heterotropic ossification (1). Conclusion: open reduction internal fixation is best reserved for minimally comminuted fractures in young patients with three or fewer articular fragments. excision should be reserved for >3 fragments, severely osteoporotic and neglected fractures.

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Room: Maktoum D

Abstract no.: 30778

FUNCTIONAL OUTCOMES AND COMPLICATIONS OF ARTHROPLASTY VERSUS FIXATION FOR COMMUNUTED RADIAL HEAD FRACTURES IN ADULTS: A SYSTEMATIC REVIEW

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INTRODUCTION: The goals of treatment in radial head fractures are to restore stability, preserve motion, and maintain the relative length of the radius. Comminuted fractures are deemed unstable and therefore require surgery. However there is no consensus as to the whether fixation or replacement yields better results. **OBJECTIVES:** The purpose of this systematic review was to search for and critically appraise articles directly comparing functional outcomes and complications for fixation versus arthroplasty for comminuted radial head fractures in adults. **METHODS:** A literature search of MEDLINE (PubMed), EMBASE and Cochrane library databases using the keywords “radial head fracture” AND “fixation OR ORIF” AND “replacement OR arthroplasty” was undertaken. The critical appraisal checklist (adapted from Critical Appraisal Skills Programme, Oxford) for an article on treatment was used to aid assessment. **RESULTS:** Following critical appraisal of the studies identified, a number of methodological weaknesses were recognized. This demonstrates the paucity of good quality, randomised trials comparing fixation versus replacement. Functional elbow scores and complication rates were comparable in the two groups. **CONCLUSION:** It is clear that further randomized comparative trials are required to clarify the decision making between fixation and replacement. In the studies identified in this review, functional outcomes and complications were similar in both groups. However, ideally, treatment decision should take into account elbow stability and degree of comminution. Fixation with good reduction may be attempted in unstable fractures (<4 fragments) and arthroplasty may be considered if this is not possible.

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Abstract no.: 30961

ELBOW DISLOCATION WITH IPSILATERAL TRANSVERSE MIDSHAFT RADIUS AND ULNAR FRACTURES: REPORT OF A RARE CASE AND LITERATURE REVIEW

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We present a rare pattern of injury in a 42 year old female patient sustaining a dislocation of the elbow, associated with midshaft radius and ulna fractures in the ipsilateral forearm after falling from a swivel chair. There was no associated neurovascular injury. She underwent closed reduction of the elbow followed by open reduction internal fixation of the radial and ulnar diaphyseal fractures. She had excellent functional outcome with no elbow stiffness following surgical fixation of the forearm fractures to allow early mobilisation and subsequent return to work. Elbow dislocations are the second most common large joint dislocation in adults and fractures of the radial and ulnar shaft are also common, but the combination of the two injuries is extremely rare. Rare injury patterns can be easily missed if not considered, hence this case highlights the importance of thorough clinical examination and re-enforces the importance of imaging the joint above and below the area of obvious injury.

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Abstract no.: 32626

IMPLICATION OF PROXIMAL ULNA ANATOMY IN DISTAL BICEPS TENDON RUPTURES AND ELBOW OSTEOARTHRITIS, A MULTI-CENTERED, COMPARATIVE-COHORT STUDY.

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Purpose: Distal biceps tendon ruptures (DBTR) and degenerative elbow osteoarthritis (OA) are relatively rare. The exact etiology is unknown and many hypotheses about risk factors exist. Our study explores the association of the proximal ulna dorsal angulation (PUDA) with these pathologies. Our hypotheses are that patients with DBTR will have a straighter PUDA causing hyperextension and increase shear on the tendon. Whereas OA patients will have a greater PUDA in flexion, leading to impingement of the olecranon in the posterior fossa. Material and Methods: Forty cases of OA and 28 of DBTR were selected from a retrospective elbow pathology database for PUDA measurement. The control group consisted of 196 lateral elbow x-rays. The DBTR cohort comprised only males and was matched in the control group (n=92 elbows.) Two independent examiners measured the PUDA. Student T-tests were used to compare groups. Results: The mean PUDA in the control group (n=196) was 5.4° (SD= 2.5°), with no difference between sexes (p=0.08). The average PUDA for OA patients was 6.3°(SD=2.7°, p=0.019) and 4.1°(SD=3.1°) for DBTR cases (p=0.005). In DBTR patients, 20 elbows (71.4%) had below-average PUDA (p=0.026). Conversely, a higher than normal PUDA was observed in 26 OA patients (66.7%, p=0,014.) Conclusion: The processes responsible for elbow OA and DBTR are likely multifactorial. However, a significant difference between the PUDA of these patients and a control group was observed. Therefore, we believe proximal ulna anatomy may play a role in the etiology of both distal biceps tendon rupture and primary elbow osteoarthritis.

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Abstract no.: 32235

POST TRAUMATIC STIFF ELBOW: ARTHROLYSIS AS A TREATMENT MODALITY

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INTRODUCTION: Post-traumatic stiffness is common following injury to the elbow joint. The presence of three articulations with a single synovial tissue-lined capsule, the close proximity of the joint capsule to the ligaments and extracapsular muscle, and the intrinsic congruity of the humeroulnar articulation have all been suggested as predisposing factors. We present the study of 60 patients. **METHODS:** of the 60 patients, 23 females and 37 males, with mean age of 26 yrs, with functional arc of flexion < 30° were treated with open arthrolysis. Monolateral fixator was used in 25 cases where collateral ligament was not found to be intact for stability. Pre op and post op range of motion and elbow stability was compared. Outcomes were assessed with Mayo elbow scores. **RESULTS:** The mean pre-operative arc of movement was 21° (0° to 30°), with mean pre-operative flexion of 56 (30° to 120°) and mean pre-operative extension of 57.3 (10° to 90°). Post-operatively the mean arc improved to 110° (60° to 140°), the mean flexion improved to 116.4° (90° to 140°) and mean extension improved to 26° (0° to 30°) (p < 0.001). 37 patients had excellent result, while 17 had good result and 6 had poor result. Post op elbow instability was seen in 5 cases. **CONCLUSION:** From the study we conclude that this is a sound procedure for stiff elbow achieving a very good range of motion with very few complications.

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Abstract no.: 31174

CLINICAL OUTCOME ANALYSIS OF PARALLEL PLATE TECHNIQUE IN INTRA-ARTICULAR DISTAL HUMERUS FRACTURES.

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BACKGROUND: Parallel plating of intra-articular distal humerus fractures proves to be superior in biomechanical studies compared to orthogonal plating yet there are inadequate clinical studies to make valid comparisons. The purpose of this prospective clinical study was to analyse the outcome of parallel plate technique in fixation of intra-articular distal humerus fractures.**METHODS:** We studied ten consecutive adults for an average duration of 14 months after an early internal fixation with parallel plate constructs for intra-articular distal humeral fractures. According to AO classification, there were six C2 and four C3 fractures. Clinical outcomes were evaluated using Mayo Elbow Performance Score (MEPS).**RESULTS:** Solid radiologic union was achieved primarily in all patients. Hardware failure did not occur in any patient. One patient with associated head injury developed severe heterotopic ossification who underwent resection for severe restriction of movement. Non-union at olecranon osteotomy site occurred in one patient. The mean flexion-extension arc was 96°. The mean MEPS score was 83. The results were excellent for 4 elbows, good for 4, moderate for 1, and poor for 1 patient.**CONCLUSIONS:** Functional results were satisfactory in intra-articular distal humerus fractures treated with stable fixation by parallel-plate technique which allows early active elbow motion.**KEYWORDS:** parallel plating, Mayo elbow Performance score, heterotopic

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Abstract no.: 32639

AN ANATOMIC BASIS FOR ENDOSCOPIC CUBITAL TUNNEL SURGERY

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Endoscopic cubital tunnel release requires clear visualization of potentially aberrant anatomy to ensure an effective release and avoid neuropathic complication. We present the anomalous anatomy revealed in 14 cadaveric dissections, as well as the outcomes of 58 cases of endoscopic cubital tunnel release. In 5 of 14 cadaver specimens, we noted a proximal fascial band. We also noted marked variability of the flexor pronator aponeurosis distal to the medial epicondyle. The average width of the cubital tunnel was found to be 2.5 cm (1.3 – 4.5). Where present (n=9), medial antebrachial cutaneous nerve branches crossed the ulnar nerve at mean distance of 3.10 cm, (2 - 4.45). Aberrant structures were noted in seven of the 14 specimens, including: the anconeus epitrochlearis muscle in two specimens, the basilic vein crossing the ulnar nerve in 3 specimens, and the so-called 'Arcade of Struthers' in one specimen. Fifty-eight cases of cubital tunnel syndrome were included from a consecutive series of 73 for endoscopic simple decompression using a scope mounted sleeve knife assembly and a clear cannula. A 3 cm curved incision was made between the medial epicondyle and the olecranon. Blunt dissection allowed for protection of the antebrachial cutaneous nerves and the identification of the ulnar nerve. Mean preoperative DASH score was 51.4, postoperative was 24.5. The Gabel and Amadio outcome scores were 15 excellent, 28 good, 7 fair and 8 poor at final follow-up (3-24mo). There were no nerve injuries or recurrences. Postoperatively two patients had hematomas that resolved without sequela.

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Abstract no.: 30718

**ABOUT ENDO-EXO-PROSTHESES - INTRAMEDULLAR,
TRANSCUTANEOUS IMPLANTS FOR REHABILITATION OF AMPUTEES**

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Patients with above- or below-knee amputation (AKA/BKA) face many challenges to mobility including difficulty with socket fit and fatigue due to high energy consumption. The aim of the Endo-Exo-Prosthesis (EEP) is to avoid problems at the interface between the sleeve of the socket-prosthesis and the soft tissue coat of the amputation stump which often impedes an inconspicuous and harmonic gait. In 1999 we began using a transcutaneous, press-fit distal femoral intramedullary device whose most distal external aspect serves as a hard point for AKA prosthesis attachment. The Endo-Exo Prosthesis (EEP) is an ingrowth prosthesis similar to a fully coated stem. It is implanted into the residual bone, allowed to osseointegrate, and exteriorized 6-12 weeks later. Connections then join the femoral or tibial stem to a prosthetic limb. The stoma matures and epithelializes, while solid bony ingrowth inhibits ascending infection. Subjective outcomes are determined using a specialized questionnaire. In Lübeck 58 patients underwent the procedure between 1999 and 2011 (53 AKA, 5 BKA). Their indication for surgery was persistent AKA/BKA prosthesis difficulties with a history of for trauma, tumor or chronicle infection. The paper presents the patient data regarding the design of the implant, the operative procedure, patient satisfaction, gait analysis and oxygen consumption. Since the introduction of high-gloss polished surfaces, soft tissue irritation is largely eliminated. Intramedullary infection has been negligible, as osseointegration seals the medullary cavity within 2-3 weeks. In summary, the EEP appears to be an attractive option in transfemoral and transtibial amputees.

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Room: Rashid A

Abstract no.: 30724

RETROSPECTIVE ANALYSIS OF OPEN FRACTURES OF THE MIDSHAFT AND DISTAL FEMUR EXTERNAL FIXATION VERSUS INTERNAL STABILIZATION

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Introduction: The purpose of this study was to determine whether different forms of stabilization for open femur fractures can be performed without influencing outcome, in particular infection and delayed unions/non-unions. Although the traditional management of these injuries is external fixation, a trend towards definitive stabilization techniques has evolved in the current literature. Methods: 44 open fractures of the femur shaft and the distal femur, treated within six hours of injury, at our urban Level I trauma centre during a ten year period were reviewed. All patients underwent emergent wound irrigation, debridement and antibiotic therapy. The method of fracture immobilization was left to the discretion of the attending trauma surgeon. Study population consisted of 12 (27,3%) GI, 13 (29,5%) GII and 19 (43,2%) GIII fractures. Results: Initially fracture management was performed with external fixation (EF) 19 (43,2%), intramedullary nailing (IM) 17 (38,6%), plating (PL) 3 (6,8%), screw fixation (SF) 1 (2,3%) and without treatment 4 (9,1%). Three (6,8%) fractures were complicated by infection, 7 (15,9%) had implant failure and 5 (11,4%) developed delayed or non-union. Conclusion: External fixation and intramedullary stabilization techniques in acute fracture treatment for open femur fractures can be considered safe and effective. Based on our results, there is no disadvantage comparing both groups, when evaluating outcome parameters.

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Room: Rashid A

Abstract no.: 31330

FIXATION OF SUPRACONDYLAR FEMORAL FRACTURES FOLLOWING TOTAL KNEE ARTHROPLASTY: IS THERE ANY SUPERIORITY COMPARING ANGULAR STABLE PLATE FIXATION VERSUS RIGID INTERLOCKING NAIL FIXATION?

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Introduction: Literature does not provide any reliable comparison between angular stable plate fixation and rigid nail fixation for stabilization of supracondylar periprosthetic femoral fractures. Thus, the purpose of this study was to compare these two implants in clinical practice relating to fracture healing, functional results and treatment-related complications. Methods: Clinical and radiographic records of 51 patients (33 female and 18 male, average age: 75.6) with supracondylar periprosthetic femoral fractures between 1998 and 2008 were prospectively gathered and retrospectively analyzed. 27 patients underwent lateral plate fixation by an angular stable plate system, whereas 24 patients were stabilized by a rigid interlocking nail device. Results: 38 (76%) patients returned to their pre-injury activity level and were satisfied with their clinical outcome. Successful fracture healing within six months was achieved in 44 (88%) patients. Comparing between plate fixation and nailing, we had equal results referring to the functional outcome. Inadequate bony fusion and treatment-related complications were higher following plate fixation, whereas incomplete primary reduction and secondary loss of reduction were seen more frequently after nail fixation. Conclusion: We had a relatively high rate of fracture healing and a satisfactory functional outcome with both implants. Rigid nail fixation showed slight advantages relating to adequate fracture union and treatment-related complications, angular stable plate fixation allowed a better reduction and fixation of the fragments. In summary, both implants appeared to be equally effective for stabilization of these fractures.

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Abstract no.: 32005

BIOMECHANICAL EVALUATION OF SEMI-BICORTICAL SCREW FIXATION WITH LOCKING COMPRESSION PLATE FOR SURGICAL MANAGEMENT OF DIAPHYSEAL FEMORAL FRACTURES

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Locking compression plates (LCPs) have been widely used for long-bone fractures in either unicortical (UF) or bicortical screw fixations (BF). However, studies have shown that UF is vulnerable to torsional load while BF offers high structural rigidity but risks nerve damages. Recently, semi-bicortical screw fixation (SBF) with screw tips extended up to within the medial cortex have been used to complement shortcomings both UF and BF. In our study, we conducted a comparative finite element (FE) study to assess biomechanical feasibility of SBF and optimal screw spacing along the plate. A previously-validated FE femur model was used to construct a 4-week post-op FE model. Two fracture conditions were simulated with midsection gap of 1mm and 10mm that filled with callus. For each LCP fixation (UF, BF, SBF), 4 different screw placements were computer-generated to predict structural rigidity of the construct and optimal screw insertion sites. They are loaded with axial compression (2000N) and torsion (18.9Nm). Our results confirmed that post-op structural rigidity was highest in BF followed by SBF and UF. The rigidity of SBF was comparable to that of BF (93.4~98.9% under compression and 71.4~98.4% under torsion) depending on the gap size and screw placement whereas corresponding figures for UF remained at 93.0~98.5% and 46.9~61.2%, respectively. In SBF, fracture gap size was a critical factor in structural rigidity especially against torsion(1-mm, 71.4~72.5% vs. 10-mm, 92.1~98.4% of BF). The most optimal SBF (98.4% of BF) was predicted when 40mm screw-to-screw spacing was selected with insertion closer to the fracture gap demonstrating biomechanical feasibility of SBF in terms of structural rigidity.

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Abstract no.: 32451

FRACTURES OF THE DISTAL TWO THIRDS OF FEMUR - RETRONAIL VERSUS ANTEROGRADE CENTROMEDULLARY NAIL

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Aim: to compare the clinical results of retronail versus anterograde statically locked nail in fractures of the distal two thirds of the femoral diaphysis. **Material and methods:** 134 patients with fractures of the distal 2/3 of the femoral diaphysis were included in a prospective study. In 72 cases, patients underwent osteosynthesis with anterograde femoral nail (Group1), while in 62 cases (Group2) we performed osteosynthesis with retronail. All nails were statically locked. The 2 groups were similar in terms of age and gender distribution, pattern of fractures and body mass index. Blood loss, operating time, duration of hospital stay, moment of union, incidence of non-union, complications, extension loss were recorded. **Results:** The average per operative blood loss was 452 ml (120-650ml) in Group 1 and 258 ml (120-700ml) in Group2 ($p < 0,01$). The mean duration of the surgical procedure was 65 min in Group1 and 56 min in the second ($p > 0,05$). The average duration of the hospital stay was 7,1 days in Group1 and 5,9 in Group 2. The average extension loss was 3,84 degrees in Group1 and 8,68 in Group2 ($p < 0,05$). **Conclusions:** The blood loss was significantly higher in the anterograde group. The duration of the surgical procedure (especially in obese patients) and of the hospital stay were both shorter in the retronail group. The retrograde approach leads to higher union rate, but the difference is not statistically significant. The retronail will be the first choice in bilateral femoral fractures, obese patients, associated ipsilateral femur and tibia fracture, the presence of a proximal femoral implant. Retronail osteosynthesis is associated with a slight loss of knee extension.

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Room: Rashid A

Abstract no.: 32627

COMPARISON OF MIPPO VS. ORIF IN DISTAL FEMORAL FRACTURES

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Aim: To compare the efficacy and safety of minimally invasive percutaneous plate osteosynthesis (MIPPO) and ORIF in distal femoral fractures. **Mat:** In the retrospective study we analyzed results of 64 patients with distal femoral fractures treated in our hospital from 2004 to 2010 with MIPPO (34 cases) and ORIF (30 cases). Two groups of patients were equal in terms of age, comorbidity, severity of soft-tissue injuries and types of fractures. **Results:** Mean follow-up comprised 28.3 ± 5.6 months. Non-unions were seen in 2 cases in MIPPO group (5.8%), and in 3 cases in ORIF group (10%) in severe 33C fractures with concomitant soft-tissue injuries. Infection occurred in one case of ORIF (with concomitant open patella fracture). Axial deviations exceeding 5 degrees were seen in 3 (8.8%) and 2 (6.6%) cases respectively. Shortening more than 1 cm was noticed in 5 MIPPO cases (14.7%) and in 4 ORIF cases (13.3%). The results according to Neer-score comprised in MIPPO group 87.3 ± 4.1 , mean ROM in knee was $116.3 \pm 7.4^\circ$. In ORIF group Neer-score was significantly lower and comprised 81.6 ± 5.4 ($p \leq 0.05$), knee range of motion was $107.1 \pm 9.1^\circ$. **Conclusions:** MIPPO of distal femoral fractures is reliable treatment modality and should be used primarily in complex fractures. ORIF still may be used in certain simple fractures, but the presence of soft-tissue injuries is relative contraindication to ORIF. Both methods require accurate preoperative planning and careful intraoperative assessment of fracture alignment.

Date: 2012-11-30

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Room: Rashid A

Abstract no.: 32860

RESULTS OF INTRAMEDULLARY NAILING OPEN FEMORAL FRACTURES IN CHILDREN

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Introduction Intramedullary nailing has become the treatment of choice for closed femoral shaft fractures in children and adolescents. But recently the series of patients with open femoral fractures treated using intramedullary nailing were published. The aim of this study is to evaluate the results of intramedullary nailing of open femoral fractures in children.

Materials and methods From the 1st Jan 2001 to the 30th Jun2011 ,185 children were treated for femoral shaft fracture in our department. 20 fractures were opened in 19 patients .The mean age of patients was 12,6 years (5-16,5). Using the Gustilo-Anderson classification there were the type I in 15 patients, II in 5,IIIA-2,IIIB-1,IIIC-1. There were 7 transversal type fractures, 9 oblique, 4 comminuted fracture. The average Injury Severity Score for 19 patients was 30 (10 to 42).

Results The mean follow up was 57 month (14-111). 17 patients bone consolidation was obtained 3 month post –op. 1 patients with deep infection presented bone consolidation 4,5 month post-op. Patient 16,5 years with open femoral fracture type II according to Gustillo presented infection with Staphylococcus aureus 19 days after procedure. Conversion from intramedullary to external fixation was used. Infection was stopped 6 weeks after trauma.

Conclusion 1. Treatment of open femoral fractures is a challenging problem. 2. In children with polytrauma ,multiple fractures, head injures and other conditions which necessitate intensive nursing care , intramedullary nailing of opens femoral shaft fractures(type I,II,IIIA,IIIB) should be preferred.

Date: 2012-11-30

Session: Trauma: Femoral Shaft & Distal Femur

Time: 08:30 - 10:00

Room: Rashid A

Abstract no.: 32314

MANAGEMENT OF LIMB LENGTH DISCREPANCY WITH RING FIXATORS AND SIMULTANEOUS DEFORMITY CORRECTIONS.

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Background: Many patients are managed for limb Length Discrepancies (L.L.D) to improve function, reduce disability and minimize secondary local & distant complications of L.L.D such as 2ndry scoliosis, gait, growth abnormalities. While correcting L.L.D in lower limb either in femur or tibia or both with the help of ring fixator by Ilizarov technique and simultaneous correction of associated problems such as deformities, nonunion also managed. We evaluated various technical problems, Complications, morbidity and suggested solutions to overcome them. Materials and Methods: 118 limb length discrepancy patients managed with Ilizarov ring fixator after corticotomy and bone transfer. Age distribution 5yrs to 50yrs, 78 males & 40 females, 90 tibia, 28 femur. Fixation is supplemented with additional wires and/or pins depending upon stability. Patients are mobilized and allowed to bear weight gradually. Monthly radiological and clinical follow up, observed to supervise distraction, callus formation. Once the correction is achieved, double the time of distraction, Ilizarov ring frame is kept for callus maturation. After removal of frame, cast is applied. Results-Evaluated by considering following Criteria. 1) Correction of discrepancy at the same time management of any other associated problem like deformities, nonunion. 2) Functional outcome (gait, Rang of movement of neighboring joint). 3) Patient Satisfaction. Complications: a)Related to bone regeneration-3, b)Related to infections:4, c) Related to soft tissue contracture:8. Conclusion: Corticotomy gradual, cyclic, regular lengthening of callus with the help of ring fixator, using Ilizarov technique is better modality for management limb length discrepancy in lower limb which allows simultaneous correction of associated problems such as deformities, nonunion.

Date: 2012-11-30

Session: Trauma: Femoral Shaft & Distal Femur

Time: 08:30 - 10:00

Room: Rashid A

Abstract no.: 31717

A NEW HINGE SYSTEM IN LIMB LENGTHENING AND CORRECTION OF AXIAL DEVIATIONS

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Simultaneous limb lengthening and correction of axial deviations is not easy to manage and need a special external hinge distraction system which has been developed, Since 1995 to 2011 this new hinge system was used in 624 patients with deferent indications in lower limbs, they presented with limb length discrepancies and axial deviations or mallrotaion. The External Fixation Hinge System / SLDF1; Salamehfix 1/; is an arch hinged system consists of small arches with a various diameters and perimeters, to assemble deferent sizes of limb in the upper and distal part with connecting special hinges allows combined and simultaneous lengthening with correction of axial deviations , deferent sizes of arcs to choose a special size for each patient with keeping an excellent technical functions, multiplanar, multidirectional corrections; makes the system more suitable to each patient in size and allows the patient to move his joints freely, Stable fixation of the system because of insertion wires and screws in nearly right angels and in deferent levels and angels it allows also early weight bearing , the insertion of wires and half pens in a minor painful regions makes the tolerance to the system is more acceptable . X- Ray control is easy. Complications where mostly superficial pin infections, No nerve or vascular injuries Conclusion; The new developed hinge system is more comfortable, easy to use and allow treatment of complex deformities with simultaneous lengthening and early weight bearing.

Date: 2012-11-30

Session: Trauma: Femoral Shaft & Distal Femur

Time: 08:30 - 10:00

Room: Rashid A

Abstract no.: 31854

COMPARATIVE STUDY OF OUTCOME OF TITANIUM AND STAINLESS STEEL ELASTIC NAIL FIXATION FOR PAEDIATRIC FEMORAL SHAT FRACTURE

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The determination of ideal treatment of femoral shaft fracture in pediatric age group depends upon age of the child, the location and type of the fractures. The biomechanical properties of titanium are often considered to be superior to those of stainless steel for intramedullary fracture fixation and in vitro mechanical studies have demonstrated equal or superior fixation of pediatric femoral fractures with use of titanium elastic nails (TEN) as compared with stainless steel elastic nails (SSEN). This randomized controlled study was done to compare the outcome of titanium and stainless steel nail in paediatric femoral fractures in 5-14 years of age group. 44 patients with femoral shaft fracture fulfilling inclusion criteria were included in study and divided into two groups. Group one treated by Titanium elastic nail and group two treated by stainless steel elastic nails both by retrograde technique. 2 patients lost to follow up in titanium elastic nail group. Final analysis included 20 patients in TENS and 22 patients in SSEN group. The results were excellent in 70%, satisfactory in 30% in TEN group In SSEN group, results were excellent in 54.5%, satisfactory in 36.36% and poor in 9.1% using Flynn criteria. Our study showed that titanium elastic nail is a better fixation device than stainless steel elastic nail in the context of outcome and complications.

Date: 2012-11-30
Session: Trauma: Hip Fractures
Time: 10:30 - 12:00
Room: Rashid A

Abstract no.: 31930

VARUS HIP DEFORMITY- CORRECTION BY FIXAS

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Introduction: Post traumatic deformity of hip joint with extremities shortening is also often consequence of insufficient treatment especially with unstable fractures. This is especially often problem with heavy war injuries, always followed by bone defects. The rapid development of the secondary osteoarthritis due to head position changes, joint bodies un congruency and disordered normal bio mechanical relations indicates operational solving. Post traumatic deformities involve contractures, muscle and bone atrophy and infections. Classical solution of this problem requires several operations and costs too much. Methods: The last 15 years we have been using our own fixator construction, FixAS (anatomical stable and accommodation successful treatment). Simultaneous solution for both problems is provided by FixAS device. Apparatus application and corticotomy were always performed without opening (closed procedure), and fixation of small proximal fragment with X-rays control. Post-operative, first a correction deformity is performed, and than prolongation up to full length. The apparatus construction provides stable fixation, even in the case of a very short proximal fragments (head and neck), free movements of knee and hip, and much more comfortable treatment then previous methods. Results: We have been treating 45 cases, average age of 37 years (19 to 58), 35 male and 2 female, with average angle of 105° (75° to 115°), and average shortening of 5.5 cm (3 to 8 cm). In all these cases, after treatment the angle has been endured up to 120° and more, and shortening corrected fully and controlled during the treatment by a metal meter.

Date: 2012-11-30
Session: Trauma: Hip Fractures
Time: 10:30 - 12:00
Room: Rashid A

Abstract no.: 32091

REVERSAL PROTOCOLS FOR HIP FRACTURE PATIENTS ON WARFARIN.

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Introduction: Commonly, patients presenting to the accident and emergency department with a hip fracture are on Vitamin K antagonists to prevent thromboembolic events. Anticoagulation has been identified as a common cause of delays to the operative management. The recent SIGN and NICE guidelines advise that warfarin should not delay the surgical management of hip fracture patients. Methods: A retrospective study of all patients admitted with a hip fracture between January 2010 and August 2011 was conducted. Patients on warfarin at the time of admission were identified and subsequently studied. Time from admission to the operating theatre, co-morbidities, ASA grade and complications were recorded. Results: 24 patients were included. These were split in four groups according to the reversal regime they received. Four did not require reversal (NRR), six were not reversed despite this being indicated (NR), five were reversed inappropriately (IR) and nine had their warfarin appropriately reversed (AR). The mean time to theatre for the NR patients was 2.3 days, for the IR patients 2.6 days and for the AR patients 1.2 days. The NR and IR patients demonstrated statistically significant increased time to theatre when compared to the AR group as well as a distinct trend of higher morbidity. Discussion: Inappropriate reversal of anticoagulation resulted in significant delays to the operative management of these fractures. In accordance with the SIGN and NICE guidelines we recommend early administration of Vitamin K to reverse the warfarin effect. Local protocols should be available to guide the practitioners managing anticoagulated patients.

Date: 2012-11-30
Session: Trauma: Hip Fractures
Time: 10:30 - 12:00
Room: Rashid A

Abstract no.: 32113

OUTCOMES OF THE 3RD GENERATION GAMMA NAIL: DIFFERENCES IN OUTCOME IN USING THE LONG AND SHORT GAMMA NAIL

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Introduction: Gamma nail is a cephalomedullary implant used in proximal femoral fracture management. Short gamma nails are technically less demanding, but there is concern over potentially higher complication rate. Objectives: To determine differences in implant related complications between the short and long gamma nail. Methods: 54 patients were identified who had either short or long gamma nail for a proximal femoral fracture. Case notes and radiographs were reviewed retrospectively to determine the complication rate due to implant failure. Fisher's exact test was used for testing the significance. P value less than .05 was considered significant. Results: Out of 54 patients, 20 patients had short gamma and 34 patients had long gamma nail. The average age in the long Gamma nail group was 71 years and in the short gamma nail group was 80 years ($p > .05$). 4 (20%) patients with short gamma nail had implant related complications whereas none in the long gamma nail group ($P < .05$). 2 (10%) patients had fracture of the nail at the level of proximal screw, 1 (5%) patient had cut out of the screw from the femoral head and 1 (5%) patient had fracture below the tip of the nail. Conclusions: Our study suggests that short gamma nails are associated with higher rate of implant related complications and we now routinely use long gamma nail whenever indicated.

Date: 2012-11-30
Session: Trauma: Hip Fractures
Time: 10:30 - 12:00
Room: Rashid A

Abstract no.: 32128

28-DAY READMISSION FOLLOWING SURGICALLY TREATED NECK OF FEMUR FRACTURE

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Introduction Medical optimization of patients admitted with neck of femur fracture prevents perioperative and postoperative medical complications, which affect morbidity and mortality. Studies have quoted 6 –week’s readmission rates at 5 to 12%. Readmission does not only measure the quality of care following surgery but has significant financial sanctions on the health care trust and adverse event on the patient. This study reports the rates and reasons for 28-day readmission neck of femur fracture. **Methodology** Retrospective review of consecutive patients following neck of femur was obtained via the trust’s national hip fracture database from August 2000 to October 2011. 28-day readmissions were defined hospital re-attendance following an index-operated neck of femur discharge. The Stata statistical computer package was used to analyze data. An arbitrary level of 5% significance (two-tailed) was assumed. **Results** 6237 patients were admitted following neck of femur fracture with a mean age of 82 years. 335 (5%) were admitted within 28 days with a mean age of 83 years. 82 different readmission reasons were recorded with majority admitted following lower respiratory tract infections (N33). Median time to readmission was 8 days. There was no significant difference in time between the two sexes ($p=0.40$) or age ($p=0.87$). Median time to readmission was lower for higher ASA grade although statistically insignificant (II=9days;III=8days;IV=7days). **Conclusion** Although our readmission rate is lower than quoted in literature, there remains a need to reduce this to barest minimum. Preventing this medical related readmission causes during index admission will reduce this burden.

Date: 2012-11-30
Session: Trauma: Hip Fractures
Time: 10:30 - 12:00
Room: Rashid A

Abstract no.: 32535

**PFN, DHS OR BIPOLAR HEMIARTHROPLASTY IN UNSTABLE
INTERTROCHANTERIC FEMORAL FRACTURES IN THE ELDERLY WITH
MULTIPLE CO-MORBIDITY: A RETROSPECTIVE ANALYSIS**

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Introduction: Surgical decision-making in unstable intertrochanteric femoral fractures in the elderly (age > 70yrs) with multiple co-morbidity is critical. Dynamic hip screw (DHS) has shown high rates of implant-related complications (failure, cut out), and delayed rehabilitation. Proximal femoral nail (PFN) warrants good technique to prevent complications. Bipolar hemiarthroplasty (BHA) has been suggested for early rehabilitation. We retrospectively compared early results following treatment of unstable intertrochanteric femoral fractures with DHS, PFN and BHA. Materials: Hospital records from Dec 2006 to Nov 2010 were reviewed for treatment of elderly patients (age>70 yrs) with unstable intertrochanteric femoral fractures. 110 patients (mean age 86 yrs; range, 71 to 97 yrs) matched for demographics and co-morbidity (ASA grade III or IV) were included. Three treatment groups (DHS, PFN and BA) were compared for operative times (incl. fluoroscopy time), blood loss, hospitalisation, mobilization, weight bearing status, complications, and clinical scores (Harris hip scores, patient satisfaction) over an average 12 month follow-up. Results: All groups showed comparable operative times, blood loss and requirements. The DHS group had delayed mobilization, and highest complication rates. Duration of hospitalization and time-to-weight-bearing was least in PFN group. The BHA group had some minor complications, but patients were the most satisfied amongst all. No differences existed between the PFN and BHA groups at 6 months. Discussion: DHS fixation is prone to highest rates of morbidity and implant-related complications. PFN is effective and safe, but needs strict surgical technique. Bipolar hemiarthroplasty has advantages of early mobilization, and minimal complications.

Date: 2012-11-30
Session: Trauma: Hip Fractures
Time: 10:30 - 12:00
Room: Rashid A

Abstract no.: 32704

RADIOLOGICAL OUTCOMES OF INTERTROCHANTERIC HIP FRACTURES TREATED WITH THE INTERTAN NAIL

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The purpose of present study is to determine the ability of the Intertan in stabilization of intertrochanteric hip fractures. An IRB approved retrospective study was conducted in 40 consecutive patients. 4 patients were lost to follow-up with 36 patients available for long term follow-up with complete data for statistical analysis. The majority of fractures (79%) were classified as unstable (OTA 31-A2). Average time to union was 12.9 weeks. No patients sustained any intra op complications. 1 patient sustained a femoral shaft fracture shortly after surgery secondary to a fall and was revised to a long nail. 1 patient demonstrated partial lag screw cutout, but the fracture healed in an acceptable position. 2 patients had leg shortening more than 1 cm, and 1 patient had femur neck-shaft angle progression of more than 10 degree. However, these factors did not statistically affect the final ambulatory status of these pts. Average change in neck shaft angle was 3.1 degrees, average lag screw migration 3.9 mm and average lag screw telescoping 3.8 mm. Radiological changes occurred within the first 8 weeks post-op. None of the previous shown determinants such as TAD, quality of reduction, and position of the lag screw appeared to significantly affect the small incidence of varus collapse, lag screw migration and telescoping that we observed. The present study demonstrates the Intertan's ability to function as an effective device for intertrochanteric fractures. The implants unique design imparts substantial rotational stability and functions effectively to block excessive subsidence.

Date: 2012-11-30
Session: Trauma: Hip Fractures
Time: 10:30 - 12:00
Room: Rashid A

Abstract no.: 32893

PREDICTORS OF EARLY MORTALITY AFTER HIP FRACTURE SURGERY

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KINGDOM)

Introduction: Early mortality after hip fracture surgery remains high. The aim of our study was to examine the causes and potential risk factors for 30-day mortality rates after hip fracture surgery at a high volume tertiary care hospital. Methods: A total of 467 patients that underwent hip fracture surgery at our institution were retrospectively reviewed. Data on age, gender, implant type, comorbidities, admission source, ASA grade, haemoglobin levels, time to surgery and mortality was collected on all patients. Causes for 30 day mortality were examined. Multivariate analysis was undertaken to identify potential factors associated with early mortality. Results: The 30 day mortality rate was 7.5%. The commonest causes of death were pneumonia (37.1%), acute coronary syndrome (31.4%) and sepsis (14.3%). Surgery after 48 hours of admission had a significantly higher 30-day mortality (11% versus 4%, $p=0.006$). There was a significant difference in age ($p=0.034$), admission source ($p<0.001$), preoperative haemoglobin ($p<0.001$), walking ability ($p=0.004$) and comorbidities of dementia ($p=0.01$), cardiac disease ($p<0.001$), COPD ($p=0.036$) and renal failure ($p=0.007$) between the 30-day mortality group and the rest of the cohort. Multivariate analysis identified surgical delay of more than 48 hrs, admission source and a history of cardiac disease as the strongest predictors of 30 day mortality. Conclusion: Respiratory sepsis and cardiac events are the commonest causes for early death after hip fracture surgery. Surgical delay is an important but avoidable determinant of early mortality after hip fracture surgery. Respiratory and cardiac function needs to be optimised postoperatively to minimise such events.

Date: 2012-11-30
Session: Trauma: Hip Fractures
Time: 10:30 - 12:00
Room: Rashid A

Abstract no.: 32938

THE ARTIFICIAL BONE AUGMENTATION FOR GERIATRIC UNSTABLE PERITROCHANTERIC FRACTURES USING ADJUSTABLE SLIDING HIP SCREWS.

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Introduction: Japanese society increased geriatric population. The unstable Peritrochanteric fractures have severe osteoporosis which is become difficulty fixation and will have problems of using the short femoral nails. Methods: The Adjustable Sliding Hip Screw (AS hip screw) has adjustable mechanism inside the plate which has possible to adjust the angle from 125 degrees to 145 degrees. And it has advantage for fixation of the lag screw within 20mm TAD (Tip Apex Distance). For geriatric unstable peritrochanteric fractures add to an augmentation which has been used the artificial bone (β -TCP) into the fracture site. The AS hip screw had been used 215 cases to unstable peritrochanteric fractures since Jan. 2001 to Des.2009. The mean age and average follow up were 85.2 years 599 days respectively. We analyzed the efficacy of an augmentation in the fracture site and TAD. Results: We compared the amount of lag screw sliding until bone unions with augmentation cases and non-augmentation cases. The augmentation cases had 97, and non augmentation cases had 118 in unstable peritrochanteric fractures. There were no significant differences about the augmentation and non augmentation in Evans type1 group 3, but the augmentation cases had significant differences about the lag screw sliding in Evans type1 group4. ($P<0.01$). An average TAD was 14.6 mm in augmentation group and 15.0 mm in non augmentation group. There was no difference about these groups. Conclusions: We recommend the augmentation of the fractures site using the β -TCP with AS hip screws for Evans type1 group4 ($P<0.01$).

Date: 2012-11-30
Session: Trauma: Polytrauma
Time: 14:00 - 15:30
Room: Rashid A

Abstract no.: 33111

ONE YAER RESULTS AFTER PLATEFIXATION OF THE UNSTABLE THORACI CAGE.

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Introduction: Multiple rib fractures are common in multitrauma and high energy trauma. Complications from mechanical ventilation are well studied. The results of surgical treatment have so far not been convincing. Previously used osteosynthesis is by today's fracture surgical measures not optimal. The modern plate technique with locked angle screws offers a completely new opportunity to fix these small often osteoporotic bones. Material and methods: From September 2010 until Feb 2012, 43 patients with unstable thoracic cage have been operated with the "Matrix RIB Compact system". Length-of mechanical ventilation and ICU-stay was documented. During first year clinical follow-up including, chest x-ray, the quality of life instrument EQ 5-D, pain assessment and standardized spirometry was performed. Results: 13 patients had mechanical ventilation before op. 21 patients were extubated same day postop. Significant infections in the lungs or pleura have not been seen. On x-ray, infiltration is frequently seen at the inferior part of the lung. The patients have early problems with numbness and pain, but the pain disappears at three months. At six months the patients have a feeling of stiffness and dysesthesia around the scar. Most of them are painfree. Complications, early data from EQ 5.D and standardized spirometri will be presented. Conclusion: Promising results with low rate of complications and fast recovery. We have so far no indication why surgical treatment of the unstable thoracic cage should not be recommended. Further conclusions will be presented.

Date: 2012-11-30
Session: Trauma: Polytrauma
Time: 14:00 - 15:30
Room: Rashid A

Abstract no.: 33128

**DAMAGE CONTROL - A CONCEPT TO RECOGNIZE IN
POLYTRAUMATIZED PATIENTS**

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Introduction: The damage control was not recognized as a standard surgical protocol, but it is now clear that the polytraumatized patient would only benefit and possibly survive if timely and properly conducted damage control is applied. Material and methods: In one year two polytraumatized patients - a car accident victim and bomb blast victim - were subject to damage control surgeries to control bleeding from mangled extremities, unstable pelvic fractures or proximal femoral fractures, urological, abdominal or thoracic trauma. Control of the metabolic, coagulation and thermal status was crucial in both cases. Results: The car crash accident patient survived and the bomb blast victim died 2 weeks after the initial treatment. Timely damage control procedures were initiated for the first patient - prompt control over the coagulation, hemodynamics and the electrolyte and metabolic balance. The bilocular proximal femoral fracture and the forearm fracture were treated only after the original femoral artery laceration and the hypovolemic shock was handled. The delayed hypothermia management, prolonged orthopedical trauma management - Gustillo 3C tibial shaft comminuted fracture, unstable vertical sheer pelvic fracture, urological and abdominal trauma. Discussion: The prompt initiation of resuscitation, restoration of metabolic and electrolyte balance, in line with hemodynamics and ventilation control are crucial in life threatening polytrauma. Damage control of the orthopedical trauma must be an integral part of the complex treatment protocol.

Date: 2012-11-30
Session: Trauma: Polytrauma
Time: 14:00 - 15:30
Room: Rashid A

Abstract no.: 31150

INFLUENCE OF MALPOSITIONING OF THE ARM ON THE RADIOGRAPHIC RANGE OF MOTION MEASUREMENT

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Purpose: Radiographic range of motion measurement of the elbow has shown high precision and reliability. In order for this method to be used routinely in research studies, it is important to describe its limits regarding (1) rotation of the arm from the perfect lateral position and (2) the length of the humerus and ulna visible on the radiograph. Material and Methods: A 3D bone reconstruction was performed from an upper limb CT scan. Planar radiographs were simulated for various rotations of the elbow (+/- 30 degrees) and the field of view was modified, ranging from five centimeters visible to the complete upper limb. Results: There was less than 2.5° of disparity (mean=0.68°, SD=0.43°) when the flexed arm was rotated between -30.0° (external rotation, ER) and + 18.0° (internal rotation, IR). For extension, measured angles differed by less than 2.5° (mean=0.79°, SD=0.57°) within -15.0° (ER) to +30.0° (IR). When a minimum of 12 cm of humerus or ulna was visible from the capitellum on the radiograph, measured angles varied very slightly (mean disparity of 0.71°, SD= 0.71°). Conclusion: ROM measurement shows consistent results, despite 15 to 30 degrees of internal or external rotation. A minimum of 12 cm of humerus and ulna are necessary for a valid measurement. Radiographic ROM measurement is still recommended over the goniometer for research purposes for its high reliability and precision. Moreover malposition of the elbow should not jeopardize results since it will most likely result in angle measurement variation of less than 2.5 degrees.

Date: 2012-11-30
Session: Trauma: Polytrauma
Time: 14:00 - 15:30
Room: Rashid A

Abstract no.: 32075

PELVIC BINDERS- TO USE OR NOT USE? A REVIEW OF THEIR USE IN A LEVEL 1 TRAUMA CENTRE

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The pelvic binder is now the initial stabilisation of choice for the immediate management of pelvic ring injuries and is used acutely in the management of exsanguinating pelvic trauma. Its use has become pivotal in treating those patients who have sustained high energy injuries. Despite its importance, it is sometimes used in injuries where it is not indicated and when used, can be improperly placed. Circumferential pressure is applied over the greater trochanters and not the iliac crests. Care must be exercised so as to ensure that the pelvis is not reduced beyond its normal anatomical position. Whether or not pelvic binders were indicated and their adequate positioning was assessed in a level 1 trauma centre before and after teaching was provided to accident and emergency staff in line with national guidelines (Major Pelvic Trauma '09). Position was assessed via radiographic evidence. A total of 60 patients were used in the study. Prior to educating emergency staff, pelvic binders were sometimes not indicated and their placement was erratic. Following education of the relevant staff and closure of the audit loop, binder use became more appropriate and their position more consistent ($p < 0.005$). It is appreciated that pelvic binders are often placed in the pre-hospital setting however it is important that their indication and position are assessed and corrected if necessary on presentation to the Emergency Department. We have demonstrated that education of the relevant staff is very important to ensure this vital piece of equipment is correctly used.

Date: 2012-11-30
Session: Trauma: Polytrauma
Time: 14:00 - 15:30
Room: Rashid A

Abstract no.: 33162

PULMONARY COMPLICATIONS AS A CAUSE OF DELAYED OPERATIVE TREATMENT OF PELVIC FRACTURES IN POLYTRAUMATIZED PATIENTS

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Introduction: The development of pulmonary complications in polytraumatized patients plays an important role in polytrauma treatment. Recent reports showed that acquisition of pulmonary complications is associated with elevated morbidity and mortality rates. The aim of our study was to investigate the causes and the effects of pulmonary complications. Methods: Data of 186 polytraumatized patients with severe pelvic trauma were retrospectively collected. 52 patients were separated into 3 groups: Group 1: immediate ORIF, Group 2: ORIF within 7 days after admission, Group 3: secondary ORIF, later than 7 days after admission. Delay of operative treatment, duration of ICU stay, general stay in hospital and ventilator days were assessed. Circumstances leading to conservative treatment were evaluated. Attention was paid to the kind of pulmonary complication, complications of cardiac or abdominal origin, thoracic trauma and its AIS code. Results: Among the 52 operatively treated patients, 21 (40%) underwent secondary ORIF. In 60 % of the cases the cause was the instable respiratory situation. Pneumonia was the prevalent complication (69%). Lung contusion seems to be the most relevant injury for development of pulmonary complications and with a prevalence of 85% seemed to be an important contributory factor. After stabilisation of the respiratory situation these patients underwent ORIF 17 days in average after trauma. The length of the ICU stay, as well as of ventilator days was increased in secondary treated patients, especially in patients with pulmonary complications. Conclusion: Pulmonary complications seem to be the most relevant cause of delayed treatment of pelvic fractures in polytraumatized patients.

Date: 2012-11-30
Session: Trauma: Polytrauma
Time: 14:00 - 15:30
Room: Rashid A

Abstract no.: 31923

DIFFERENT INJURY COMBINATIONS INFLUENCE SHORT-TERM OUTCOME IN MULTIPLE MUSCULO-SKELETAL TRAUMA. THE IMPORTANCE OF MICRO PLANNING.

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There is currently no standard or comprehensive way to measure short-term outcome in patients with multiple musculo-skeletal injuries. AIS/ISS is merely a guide to mortality while SF-36 looks at long-term effects. It is well known that early mobilisation hastens general recovery of the patient. Mobilisation time following an ipsilateral tibial and femoral fracture is different when compared to the same injury on contralateral limbs. Additional upper limb or pelvic fractures or both makes management complex and delays mobilisation. We looked at 5502 trauma admissions between 1999 and 2009 in our hospital near Calcutta. These were classified into different injury combinations based on the number of limbs involved and whether the trunk was injured. We left out patients with major head, chest, abdominal or soft tissue injuries. Number of days to mobilisation from date of last ORIF was taken as the end point indicator of short-term outcome. This number correlated mathematically with the injury combinations sustained. Single long bone injuries involving the upper limb could be mobilised the quickest while pelvic injuries took the longest. It may not be possible to fix all fractures at one go. Surgeons need to decide the type of fracture fixation (nail vs. plate) and the sequence of fixation (upper vs. lower limb or tibia vs. femur) depending on the injury combinations, resources available and the patient's general condition. Micro planning (customisation of an individual's treatment) needs to be systematic yet flexible as the condition of the patient might change while the plan is in progress.

Date: 2012-11-30
Session: Trauma: Polytrauma
Time: 14:00 - 15:30
Room: Rashid A

Abstract no.: 32056

MOTIVATION DEPENDING OUTCOME TO PASS A STANDARDISED COURSE FOR TREATMENT OF THE POLYTRAUMA PATIENT (ATLS)©

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Participants get a manual and a pre-test before a course. At the end of the course they have to manage a written and a hands-on exam. In the beginnings physicians with experience and high intrinsic motivation took part. With rising numbers of participants the impression occurs that the results decrease. We evaluated the influence of intrinsic and extrinsic motivation. A questionnaire was filled by participants. Information about age, education level, department, position, motivation, cost absorption by the employer has been requested. Retrospective 376 questionnaire have been analysed from the years 2009-2010. Authorisation by the ethics committee was obtained. Results in the Post-Test are significant ($p < 0,05$) higher within the intrinsic motivation group than in the extrinsic group. Participants with intrinsic motivation presented better results. 27 participants had an cost absorption depending to pass the exams. These reached in the Post-Test meanly 80%. The other participants reached 87,5%. No significant better results have been found for cost absorption depending to pass the exams. On average 213 residents achieved 87,2% in the Pre- and 86,73% in the Post-Test. 125 senior physicians attained 85,28% in Pre- and 86,44 in the Post-Test. 26 chief physicians achieved 86,83% and 85,29%. Residents showed better results than senior and chief physicians ($p > 0,05$). Self paying participants had the best results in the Post-Test. Beside the positive effect of intrinsic motivation the study shows that young physicians receive good training by that course format. So they got better results than the experienced physician. So ATLS is highly recommendable for newcomer.

Date: 2012-11-30
Session: Trauma: Polytrauma
Time: 14:00 - 15:30
Room: Rashid A

Abstract no.: 32135

WHO KNOWS BETTER: THE PATIENT OR THE DOCTOR?

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Introduction: Simple steps for the optimization of the Triage-System in the Emergency Department (ED) can make the difference. The aim of the study was the assessment of the sensitivity and specificity of patient opinion, clinical history and clinical examination in the diagnosis of extremity fractures. Methods: We prospectively questioned 436 patients with extremity injuries (59.2% men) in the ED, whether they believed that they had a fracture. The physician opinion after the medical history and after the clinical examination was documented. The presence of a fracture was radiologically controlled. Results: A fracture was present in 134 patients (30.7%), 302 (69.3%) had none. In 79 cases the fractures was in the upper extremity, in 55 cases in the lower. Sixty-seven patients recognized their fracture (sensitivity of patient opinion: 50%). Of the 302 without fractures, 224 detected that they had no fracture (specificity of patient opinion: 74.8%). The physicians were able to detect a fracture after clinical history in 89 cases. After clinical examination 106 fractures were diagnosed (12.6% increase). The sensitivity of the clinical history was 66.4%; its specificity 85.2%. In combination with clinical examination the sensitivity was 79.1% and specificity 87.5%. The first evaluation on fracture presence cannot be based on patient opinion. The combination of clinical history and examination can detect a fracture in almost 80% of the cases and in almost 90% of the cases to rule one out. These results confirm the importance of clinical history and examination and can aid to avoid unnecessary radiological examinations.

Date: 2012-11-30
Session: Trauma: Polytrauma
Time: 14:00 - 15:30
Room: Rashid A

Abstract no.: 31695

OPEN CHEST CPR IN CASES OF BLUNT TRAUMA – THERE ARE SURVIVORS

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Introduction: Concerning the widespread opinion about resuscitation in cases of blunt trauma, results are regarded as poor and the survival rate as minimal. In cases of penetrating trauma recommendations are given towards emergency thoracotomy and the survival rates show favourable results. The question remains if open CPR is a feasible option in cases of blunt trauma with traumatic cardiac arrest. Methods: 20 cases of Open CPR were followed over a time period of 6 years (2006 - 2011). Patients were treated in a Level I trauma center according to ATLS principles, some received open CPR in preclinical settings by hospital staff from the same trauma center. Relevant patient data were screened along with data entry in the German Trauma Registry. Results: The trauma load in the group was expectably high (overall ISS > 24). Open chest CPR was performed within 15 minutes after cardiac arrest or in cases of witnessed arrest after trauma. 5 patients (25%) survived traumatic cardiac arrest after blunt trauma followed by emergency thoracotomy preclinical or clinical. 3 patients showed no neurological deficit after trauma, respective treatment and hospital dismissal. Open chest CPR seems to be beneficial not only in cases of penetrating trauma. Blunt trauma does not only show unfavorable results after cardiac arrest and open CPR.

Date: 2012-11-30
Session: Trauma: Non Union
Time: 16:30 - 18:00
Room: Rashid A

Abstract no.: 30765

**MANAGEMENT OF POSTTRAUMATIC LONG BONE DEFECTS
COMPLICATED WITH OSTEOMYELITIS USING POLYLOCAL
EXTRAFOCAL OSTEOSYNTHSES METHOD**

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Introduction: long bone defects complicated with osteomyelitis and shortening is still one of the most challenging issues for trauma surgeons, the method which are describing has been used on 1127 patients over period of 30 years in Central Medical Military Academy, Kabul and Prof Mussa Wardak hospital Kabul. Methods: the technique consists of a thorough debridement of the infected part and acute shortening and fixing the limb with ring external fixator and performing more than one osteotomies for achieving the limb length back, the advantages of performing more than one osteotomy are many but important ones are: reducing the duration of treatment drastically, more neo-osteogenesis means more of neoangiogenesis which is a very good treatment for eradication of infection, we have performed in these patients, 2, 3, even four osteotomy at one go using Gigli saw technique. Results: our results showed us that in 72.2% of the cases we have achieved good clinical results meaning by union and length and physiological function of the adjacent joints. In 20.6% of the cases the results were fair and in remaining 7.2% results were bad which either caused death or amputation of the part. Our obtained results encourage to recommend this technique for use in such types of condition.

Date: 2012-11-30
Session: Trauma: Non Union
Time: 16:30 - 18:00
Room: Rashid A

Abstract no.: 31591

AUTOLOGOUS FIBULAR STRUT GRAFT: OUR EXPERIENCE OF ITS VARIOUS INDICATIONS

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Introduction: Segmental bone loss after fractures or tumor resections, fractures in very osteoporotic bones and cavities after curettage of tumors challenge the orthopedic surgeon. Surgeons in developed countries can choose vascularized bone transfers, bone transport, allogenic bone grafts, bone graft substitutes etc. In developing countries where such facilities or expertise may not be readily available, the surgeon can rely on non-vascularized fibula strut graft to treat such conditions. **Methods:** Fibular strut graft has been used in the past 8-10 years in over 152 patients in variety of difficult situations like gap non unions with extensive scarring (N=18), gaps after tumor resection (N=54), intramedullary strut in osteoporotic bones non unions (N=24), for fixation of femoral neck fractures (N= 30), for strut grafting after curettage in benign bony lesions (N=26). **Results:** For the gap non-union particularly in tibia it has been used as Huntington's procedure and we achieved very good results in more than 90% of the cases. In femoral neck fractures it has been used for the delayed and non-unions and achieved good results in more than 92% cases. And for the tumor resection it has served as good strut graft and good results in more than 80% of our cases of arthrodesis and the strut grafting after curettage. **Discussion:** Autologous free, non-vascularized fibula and cancellous graft is a useful addition to the armamentarium of orthopedic surgeon in developing countries attempting to manage segmental bone loss, whether created by trauma or excision of tumors and in fractures in very osteoporotic bones.

Date: 2012-11-30
Session: Trauma: Non Union
Time: 16:30 - 18:00
Room: Rashid A

Abstract no.: 31706

**MANAGEMENT OF INFECTED CORTICOTOMY SITES IN BIFOCAL
LEGTHENING OF INFECTED NON-UNION OF THE TIBIA.**

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Aim: the aim is to document and show the results of infection of the corticotomy site at the upper tibial osteotomy, which is usually performed for bifocal legthening of the tibia during the course of management of infected non-united fractures of the tibia. **Patients & Methods:** We present three clinical cases at whom, the corticotomy site at the upper tibia was infected due to poor skin conditions and severe infection of the diaphysis of the tibia. They were managed using the Ilizarov frame by the Accordion technique. All the infected corticotomies healed and the frame was removed after consolidation of the regenerate. **Discussion and conclusions:** infection of the corticotomy site can occur while using the Ilizarov frame for lengthening and for management of infected non united fractures. We document this incidence and show its way of management.

Date: 2012-11-30
Session: Trauma: Non Union
Time: 16:30 - 18:00
Room: Rashid A

Abstract no.: 31431

TREATMENT OF MASSIVE TIBIAL BONE LOSS AFTER OESTEOMYELITIS BY MEDIAL FIBULAR TRANSPORT

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Treatment of massive bone loss after osteomyelitis tibia by medial fibular transport report of three cases Text : Massive tibial bone loss from infection is a limb threatening situation. Many options had been described to treat this difficult problem . We report three patients with massive tibial bone loss after dihysectomy after chronic osteomyelitis tibia. These patients are treated by gradual medial transport of the ipsilateral fibula with olive wires and in one case we did hemifibular transport. All patients was satisfied with the results and hypertrophy of the transported fibula occurred in all patients and joint motion was maintained like preoperative level.Limb length was equal in two patient and the third one needed lengthening to correct limb length discrepancy by osteotomy of the transported fibula. We conclude that ilizarov method is a good option for limb salvage in patient with massive tibial bone loss after chronic osteomyelitis of the tibia.

Date: 2012-11-30
Session: Trauma: Non Union
Time: 16:30 - 18:00
Room: Rashid A

Abstract no.: 32068

COMPLEX TREATMENT OF LONG BONES OSTEOMIELITES WITH SOFT TISSUE AND DIAPHYSIAL DEFECTS.

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Aim: The treatment of infected long bones fractures associated with soft tissue and bone diaphysial defects is one of the majority problems in the orthopedic surgery. **Methods:** The study comprised 1069 patients with posttraumatic osteomyelites who were treated from 1986 to 2011 years. 962 were males and 107 females, average of patients - 42 years. 62% (663) patients with nonunion have got complications after high energy open fractures and 38%(406) - after treatment fractures by surgery. 40% of septic complications localized on the tibia. 268 patients after high energy trauma,were with bone and soft tissue defects(C-3 R,Gustillo classification). Localization: Femur-67; Tibia -161; Shoulder - 22; Forearm-18. Treatment consisted: radical necrectomi and stabile fixation of the bone nonunion, complex antibacterial therapy by use mix of polyvalent bacteriophages and broad spectrum antibiotics, radical debridement with necrectomy and secvestrectomy. Bone defects before 3 cm we treated by bone auto grafting and ex fix compression. More 3 cm we treated by surgical preparation in bone defect the nest for free vascular zed skin-muscle-bone flap from iliac bone, stabile osteosynthesis by titanium LCP and NCP locking plates. **Results:** Outcome of complex treatment showed rationality of radical debridement with stabile fixation of bone fragments. Good results were obtained in 91%, treatment was satisfied in 7% and relapsed in 2% of cases.

Date: 2012-11-30
Session: Trauma: Non Union
Time: 16:30 - 18:00
Room: Rashid A

Abstract no.: 32607

RECONSTRUCTION OF SKELETAL DEFECTS DUE TO OSTEOMYELITIS WITH NON VASCULARIZED FIBULAR GRAFT IN 15 CHILDREN LESS THAN 10 YEARS -OUR SURGICAL EXPERIENCE

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Purpose: Management of infected nonunion of long bones with a large gap is a difficult challenge requiring a multidisciplinary approach. The aim of our study was to evaluate the results of non vascularised fibular grafting in this age group. **Methods:** Over a period of five years, 15 patients younger than 10 years (range 2–9 years) with post osteomyelitic gap non-union of long bones were operated with sequestrectomy and later on by nonvascularised fibular grafting with internal fixation. **Results:** The most commonly affected bone was tibia followed by humerus, femur, radius and ulna. At an average follow-up of around 2 years (range 1–5 years), excellent results were noted in three patients, good in seven, fair in two, and poor in two. Mean follow-up was three years (1–5). All patients achieved bone healing within 4.5 months (3–6) despite a mean bone gap of 55 mm (15–100) after debridement. Of the 16 patients treated, 3 required reoperation. Postoperative improvements in range of motion were noted in all patients, and these improvements were statistically significant. No surgery-related complications or recurrences requiring surgery occurred in any of the patients. **Conclusions:** This study concluded that non vascularised fibular bone grafting is an adequate and complication-free method for children with postosteomyelitic gap non-union of long bones in developing countries.

Date: 2012-11-30
Session: Trauma: Non Union
Time: 16:30 - 18:00
Room: Rashid A

Abstract no.: 32506

LIMB RECONSTRUCTION SYSTEM A BOON FOR THE MANAGEMENT OF INFECTED NONUNIONS OF FEMORA

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Introduction: Chronic infection of long bones is the most perplexing dilemmas in orthopedic surgery. Courageous measures are required to obtain eradication of the infection, bony union and a functional extremity along with increased risk of failure or amputation. Eradication of infection by radical debridement and achieving limb length by compression distraction or bone transport using a Limb Reconstruction System is considered a new therapeutic approach in curing infected non-union that present with bone defects after debridement. Materials and Methods: Twenty one patients with infected non-union of femora were treated with Limb reconstruction System between 2001 and 2009. Thirteen patients underwent a single stage radical debridement, acute docking and compression distraction osteogenesis. Eight patients were treated with bone transport to fill the gap after debridement. Results: The results were analysed by the Dror Paley criterion which includes bone and functional results. In our study the average over all treatment in the femora was 12 months in the compression distraction group and 11 months in the bone transport group. The average healing index for the decompression and distraction and bone transport was 2.4 months and 1.4 months respectively. In this study in our institute we had 47% excellent, 43% good, 5% fair and 5% poor bone result and 52% excellent and 48% good functional results. Conclusion: Our experience with bone transport and compression-distraction in infected non-union management with Limb Reconstruction System shows that the technique achieves the goals of eradication of infection, union, and restoration of functional integrity of the affected limb.

Date: 2012-11-30
Session: Trauma: Non Union
Time: 16:30 - 18:00
Room: Rashid A

Abstract no.: 32950

TREATMENT OF INFECTED NON-UNION OF FOREARM BONES BY RING EXTERNAL FIXATOR

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Introduction: An infected non-union in the diaphysis of the radius and ulna is a difficult problem to solve. Material and methods: Nine patients with an average age 39 years (range 24 – 51) with infected non-unions of one or both bones of the forearm were treated. A staged protocol of treatment was adopted in case of active infection. The first stage included radical debridement of the site of non-union followed by an interval of antibiotic treatment. The final stage included application of a ring external fixator. Autogenous cancellous bone graft was used in all patients to treat the defect caused by the non-union and surgical resection. Patients were evaluated by The Disabilities of the Arm, Shoulder and Hand score (DASH). Results: The mean period in the fixator was 22.6 ± 3 weeks. All fractures achieved full bony union with no evidence of infection at latest review (mean 34 months). The mean DASH score improved from 90.5 pre to 41.4 postoperative ($P < 0.05$). Conclusion; Staged treatment allows eradication of infection. The Ilizarov external fixator can be used to overcome bone defects and soft tissue contractures in the forearm but special expertise in the technique are essential.

Date: 2012-11-30
Session: Trauma: Non Union
Time: 16:30 - 18:00
Room: Rashid A

Abstract no.: 31928

NON UNION- 25 YEARS COMPRESSION DISTRACTION METHOD

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Introduction: Treatment of bone defect in orthopaedics caused by removing pathological processes, or in traumatology of defect caused by primary trauma, war injuries and finally after radical debriding or complications-non union followed by infections, has always been of interest to surgeons and a challenge for methods and science in general. Getting the new-quality bone by distraction of pineal body as well as by distraction callus after corticotomy and metaphysary lengthening, has enabled treatment of larger bone defects without auto grafted cancellous bone with regenerate which is appropriate with its width and density. Methods: This work presents possibilities of compression – distraction method by Fix-AS, for solving large bone defects (up to of the bone corps) with distraction callus, and without spongiest bone transplantation, with consolidation in natural ways. 1ST GROUP: fixation with shortening of extremities and achieving the length after cover the soft tissue defect: -by lengthening in the area of non union or by lengthening after proximal or distal corticotomy. 2nd GROUP: fixation of the non union with the full length of the extremity and levelling with the nearby joint areas and treatment of the defect, either by : internal transport or external transport. Results:For the last 25 years we have successfully treated 435 non-union, of which 241 infected ones, 185 with bone defect, 51 over 5 cm, which is especially emphasized in this work. Conclusion: This way, extremity is saved even in heaviest cases, unlike other methods, which were more expensive and un formal, often ended by an amputation.

Date: 2012-11-30

Session: Research: Biomaterials V

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 32970

THE NORMAL ISCHIOFEMORAL DISTANCE AND ITS VARIATIONS

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Introduction: Following its initial description in 1977, there has been a recent surge of interest in Ischiofemoral Impingement. However, there have been no studies looking at the normal ischiofemoral distance (IFD) and its variations. The aim of this study was to measure the normal value of the IFD and describe variations caused by other variables. Methods: Between January and May 2011, patients who underwent a CT scan of their pelvis for a problem not related to the hip or the surrounding soft tissues were included. All the scans were performed in a standardised fashion with the pelvis square, hips and knees in extension and the feet in the resting position. The IFD was defined as the smallest distance between the lateral cortex of the ischial tuberosity and the medial cortex of the lesser trochanter. Two independent observers reviewed the images and performed the measurements which included the IFD, neck-shaft angle, offset and retroversion of the lesser trochanter. Results: A total of 149 subjects (295 hips) were included in the study (M:71-F:78). The average age was 51 years (range 18-92). The overall average IFD was 20.7mm (SD±8), the average IFD for females was 18.6mm(SD±8) and for males was 23mm (SD±7)(p<0.001). The IFD was noticed to decrease with ageing and correlate strongly with the offset distance. Conclusion: The mean width of the IFD in a healthy subject in a relaxed hip position is 18.6mm±8 in females and 23mm±7 in males with the distance reducing by an average of 0.08mm per year.

Date: 2012-11-30

Session: Research: Biomaterials V

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 32474

PELVIC TILT AND ACETABULAR ORIENTATION: CAN THE EFFECT BE QUANTIFIED?

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Introduction: The position of the pelvis has been shown to influence acetabular orientation. However there have been no studies quantifying that effect on the native acetabulum. Our aims were to investigate whether it is possible to quantify the relationship between pelvic tilt and acetabular orientation in native hips, and whether pelvic tilt affects acetabular cover of the femoral head. Methods: Computerized tomography scans of 93 hips (36 normal, 31 dysplastic, 26 with acetabular retroversion) were analyzed. Acetabular anteversion, inclination and cover of the femoral head were measured at pelvic tilt angles ranging from -20° to 20° in relation to the anterior pelvic plane using 5° increments. Results: The effect of pelvic tilt on version was similar in the normal, dysplastic and retroverted groups, with a drop in anteversion ranging from 2.5° to 5° for every 5° of forward tilt. The effect on inclination was less marked and varied among the three groups. Pelvic tilt increased femoral head cover in both normal and dysplastic hips. The effect was less marked, and tended to be negligible at higher positive tilt angles, in the retroverted group. Conclusion: This study has provided benchmark data on how pelvic tilt affects various acetabular parameters which in turn may be helpful in promoting greater understanding of acetabular abnormalities and how pelvic tilt affects the interpretation of pelvic radiographs.

Date: 2012-11-30
Session: Research: Biomaterials V
Time: 08:30 - 10:00
Room: Rashid B

Abstract no.: 31682

STANDARDIZED AP RADIOGRAPHS WERE NOT A RELIABLE DIAGNOSTIC MEASURE FOR THE ASSESSMENT OF ACETABULAR RETROVERSION

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Introduction: Diagnosis of acetabular retroversion is essential in femoroacetabular impingement (FAI), but its assessment from radiographs is complicated by pelvic tilt and the two-dimensional nature of plain films. We performed a study to validate the diagnostic accuracy of the crossover sign (COS) and the posterior wall sign (PWS) in identifying acetabular retroversion. COS and PWS were evaluated from radiographs and 3 dimensional (3-D) computed tomography (CT) scans as the standard of reference in 50 hips of subjects with symptoms of FAI. Methods: A CT-based method using 3-D models was developed to measure the COS, PWS, true acetabular version and pelvic tilt relative to the anterior pelvic plane. The new CT-based method aimed to eliminate errors resulting from variations in the position and orientation of the pelvis during imaging. Results: A low level of agreement for COS (sensitivity 57%, specificity 61%) and PWS (sensitivity 83%, specificity 50%) was found between radiographs and CT scans. Furthermore, the degree of the COS as expressed by the CO ratio was linked to pelvic tilt ($r=0.52$, $p = 0.01$; Fig. 3), which was small on average ($5.7^\circ \pm 6.7^\circ$) but had a large range (-8.7° to -20.3°). Discussion: These results suggest that COS and PWS determined from anteroposterior (AP) radiographs are considerably limited by pelvic tilt and inherent limitations of radiographs. Their use as the sole basis for deciding whether or not surgical intervention is indicated seems questionable.

Date: 2012-11-30

Session: Research: Biomaterials V

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 31153

EFFECTIVENESS OF ARTHROSCOPIC SUB-ACROMIAL DECOMPRESSION IN PATIENTS WITH SUB-ACROMIAL IMPINGEMENT SYNDROME

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Introduction: Health Economists in Denmark have recently reported low and delayed return to work for patients treated for Sub-Acromial Impingement syndrome (SAIS) by Arthroscopic Sub-Acromial Decompression (ASAD). Surgeons however are reporting that patients achieve good pain relief and a high standard of activities of daily living (ADL) after surgery. Aim: To evaluate the effectiveness of ASAD for patients with SAIS and correlate clinical outcome with rate of return to work. Methods: Review of prospectively collected data (01/04/2008-30/06/2011) from patients with SAIS, undergoing ASAD (previous failed conservative treatment) at the Nottingham Shoulder Unit. Pre-operative and 6-month follow-up Oxford Shoulder Score (OSS) and Constant Score (CS) were compared. The rates of return to pre-operative level of work were also analysed. Statistical analysis: Wilcoxon signed rank test. Results: 73 patients with OSS (51 also with CS documentation) were included. Improvement in median OSS was +15 (24, 39, $p < 0.0001$) and median CS was +28 (39, 67, $p < 0.0001$). Improvement in median pain score was +5 (7, 12, ***) median ADL was +5.5 (10.5, 16, $p < 0.0001$) median ROM was +13 (18, 31, $p < 0.0001$) and median strength was +4 (3, 7, $p < 0.0001$). 75% patients had 5-point improvement in OSS and 76% had 10-point improvement in CS. 75% of patients returned to their earlier level of work. Conclusion: There is significant improvement in OSS and CS, 6 months after ASAD in patients with SAIS who have had previous failed conservative treatment. The rate of return to work was good in contrast to that reported for Danish patients.

Date: 2012-11-30

Session: Research: Biomaterials V

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 31189

QUANTITATIVE ANALYSIS OF THE PULLOUT STRENGTH OF THE MISPLACED PEDICLE SCREWS IN THE THORACIC AND LUMBAR VERTEBRA

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Objective was to study the effect of iatrogenic misplaced pedicle screw placement on the mean pullout strength of lower thoracic and lumbar pedicle screws. We also studied the effect of bone mineral density, type of metal, screws diameter, region of spine and histomorphometry of pedicle on the pullout strength. Sixty fresh human cadaveric vertebrae (D10-L2) were harvested. After DEXA, CT scan and histomorphological study of pedicle, Titanium and stainless steel pedicle screws of different diameter were inserted. The specimens were divided into three groups 1) Standard pedicle screw (no cortical perforation) 2) Screw with medial cortical perforation 3) Screw with lateral cortical perforation. Finally pullout load of pedicle screws was recorded using INSTRON UNIVERSAL TESTING MACHINE. Result and Conclusion: Compared with standard placed screws, medially misplaced screws had 9.4% greater mean pullout strength and laterally misplaced screws had 47.3% less mean pullout strength. The pullout load of titanium pedicle screws was 19.4% greater than stainless steel screws (p value =0.023).The pullout strength of the 6.5mm pedicle screws was 33%greater than the 5.5mm. There was no significant difference between the mean pullout load in the thoracic and lumbar vertebra. The pullout strength was greater in vertebra with greater bone mineral density.Medial wall of pedicle were found thicker and denser than lateral wall.

Date: 2012-11-30

Session: Research: Biomaterials V

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 30993

REMOTE POSTCONDITIONING ATTENUATES ISCHEMIC-REPERFUSION INJURY IN RAT SKELETAL MUSCLE

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Purpose: The authors investigated whether a remote postconditioning (remote post-con) procedure attenuated skeletal muscle ischemia-reperfusion (I/R) injury. We determined the optimal protocol of remote post-con and investigated its mechanism related mitochondrial ATP-sensitive K⁺ channels. **Materials and Methods:** Rat left hindlimb ischemia was induced for 3 hours using tourniquet, applied around the proximal thigh. Three protocols of remote post-con procedures were applied in rat right hindlimb at the end of ischemia: 1) 10 sec group: two cycles of 10 seconds of occlusion followed by 10 seconds of reperfusion.; 2) 5 min group: two cycles of 5 minutes of occlusion followed by 5 minutes of reperfusion.; 3) 10 min group: two cycles of 10 minutes of occlusion followed by 10 minutes of reperfusion. The wet/dry ratio, histology, and contractility of muscle were evaluated. We also intra-peritoneal injected Sodium 5-hydroxydecanoate (5-HD), specific blocker of mitochondrial ATP sensitive K channels. **Results:** The 10 sec group did not have protective effect. Wet/dry ratio, inflammatory cell infiltration and muscle contractility were significantly lower in the 5 min and 10 min group, and injection of 5-HD impaired the protective effect of remote post-con. No intergroup difference between 5 min and 10 min group was observed. **Conclusions:** This study demonstrates that remote post-con provides effective functional protection to skeletal muscles from I/R injury, possibly through mitochondrial ATP sensitive K channels activation. We suggest two cycles of 5 minutes of occlusion followed by 5 minutes of reperfusion is optimal protocol of remote post-con in skeletal muscle I/R injury.

Date: 2012-11-30

Session: Research: Biomaterials V

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 30956

THE USE OF CORTICAL DEMINERALISED BONE MATRIX (DBM) FOR REPAIR AND AUGMENTATION OF PATELLAR TENDON; CADAVERIC STUDY

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Introduction: Tendon injuries remain challenging, secondary healing and prolonged postoperative immobilisation result in suboptimal outcome. This study aim to test different ways of augmenting tendon with DBM to enhance tendon repair and regeneration. Methods: The distal 1cm of the patellar tendon was excised and repair models were designed; Model-1, DBM strip was used to bridge the gap, DBM was stitched to the tendon using one suture anchor. Model-2, model-1 with the use of 2 anchors. Model-3, model-2 with off-loading by continuous Fiberwire thread looped twice through bony tunnels. Model-4, model-3 with 3 fiberwire threads as off-loading loop. All models were tested for pull-out failure force and mode of failure. Results: The median failure force for model-1 (N=5) was 250N, the median in model-2 (N=5) was 290N, samples failed either due to tendon pullout or due to suture anchor failure. In model-3 and model-4 (N=6 in each) failure of the off-loading loop was used as end point. Median for model-3 was 776N and for model-4 was 934N. There was no statistical significance between model-1 and model-2 ($p=0.249$), however statistical significance was found between other models ($p< 0.006$). Discussion: Previous studies proved that DBM can enhance healing of the enthesis and it can be used as ACL graft with evidence of ligamentisation within 1 year. DBM provides a biologic scaffold with the potential for use as ligament and tendon replacement. Our study shows that a tendon rupture can be successfully augmented with DBM giving initial appropriate mechanical strength suitable for in-vivo use.

Date: 2012-11-30

Session: Research: Biomaterials V

Time: 08:30 - 10:00

Room: Rashid B

Abstract no.: 30822

ROLE OF STEM CELLS IN FRACTURE GAP NON UNION- AN EXPERIMENTAL STUDY

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Back ground: Stem cells have the capacity for self renewal and capability of differentiation into various cell lineages. Non union remains a clinically important problem in orthopaedic surgery. Method: We randomly assigned 45 patients into 3 groups. Test group: 15 patients in which mesenchymal stem cells prepared by conventional density-gradient centrifugation using ficoll-hypaque solution were injected (n=15), control A: 15 patients in which autogenous bone marrow aspirate were injected (n=15), control B: 15 patients in which neither the stem cell nor bone marrow injection given, symptomatically treated(n=15). Ultra sound and x rays were performed at follow up of 6,12,18,24 weeks and comparison done. Results: Stem cell group: 12 patients out of 13 followed showed excellent results and 1 patient showed good result. Control A bone marrow injection group: 6/15 patients showed excellent results and 3 patients showed good results. Control B: only 2/15 patients showed excellent results. In fracture gap 4-5mm the stem cell group showed union in most of the patients. In control A and control B patients with same fracture gap failed to unite. Conclusion: This technique of percutaneous stem cell injection provides a very safe, easy, non immunogenic, non invasive and reliable alternative to open bone grafting This one-stage isolation procedure in comparison to the ex-vivo expansion of autologous cells from bone marrow/embryonic cells reduces the cost and infection rates related to the extra personal need and extended time required for the expansion.

Date: 2012-11-30
Session: Research: Biomaterials VI
Time: 10:30 - 12:00
Room: Rashid B

Abstract no.: 33119

**MUSCULOSKELETAL ALLOGRAFT TISSUE: BACTERIAL
CONTAMINATION AND ADVERSE REACTIONS IN REGIONAL TISSUE
BANK OF MILANO**

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The transplant of musculoskeletal allograft tissue in reconstructive orthopaedic surgery has markedly increased in the last few years. Multiorgan and tissue donors offer a large quantity and high quality of allografts, but sterile recovery in an operating theatre is required for the collection of musculoskeletal allograft. The risk of contamination must be borne in mind because the secondary sterilisation is not usually performed for the potential mechanical properties damages in bone and tendons allografts. The bacteriological cultures of 3384 segments obtained from 218 multiorgan or tissue donors were analysed between January 2005 and December 2011. The most commonly (60%) isolated organism were Coagulase Negative Staphylococcus, Propionibacterium spp (30%), Corynebacterium spp (10%). Report in recent years of disease transmission associated to the use of allograft have further raised concerns about the safety of such implants. Between January 2005 and December 2011, 2300 segments from Regional Tissue Bank of Milan have been transplanted. No adverse reactions have been reported in fresh-frozen implants. On the basis of our results, we can conclude that the allograft is a safety tissue that can be used by orthopaedic surgeon, but tissue recovery procedure should be improved to reduced the positive bacterial culture taken during retrieval allograft. The Orthopaedic surgeon needs to know "The Tissue Bank".

Date: 2012-11-30

Session: Research: Biomaterials VI

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 31446

EFFECT OF BONE MORPHOGENETIC PROTEIN, GRANULOCYTE – COLONY STIMULATING FACTOR & BONE MARROW STEM CELLS ON FRACTURE HEALING IN RATS WITH OSTEOPOROSIS – A COMPARATIVE STUDY

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Osteoporotic fracture is known to be deficient in local concentration of stem cells and growth factors. Aim: To study the effect of Bone Morphogenetic Protein(BMP), Granulocyte - Colony Stimulating Factor(G-CSF) & Bone marrow stem cells on osteoporotic fracture healing. Methods: 48 female Wistar rats were divided into groups of 6 rats each. Except the control rats(Group-A), all other rats underwent ovariectomy. Four weeks later, they represented estrogen deficiency osteoporotic model. A fracture was created in left tibia of all rats and stabilized with intramedullary device. Group-A(Normal controls) and Group-B(Osteoporotic controls): only intramedullary device used; Group-C: oral Alendronate weekly for 4 weeks; Group-D: bone marrow stem cells from donor osteoporotic rats(Group-H) administered locally; Group-E: local infiltration of bone marrow stem cells and recombinant human BMP-2 in collagen sponge; Group-F: BMP infiltrated locally and subcutaneous injection of G-CSF given for 5 days; Group-G: bone marrow stem cells and BMP used locally and G-CSF given sub-cutaneously. Four weeks after creating the fracture, all rats were sacrificed and radiographs of fractured limb were obtained, bridging callus studied histologically and serum VEGF and TGF- β 1 levels were estimated. Results: Mean Radiological grades: Group-B-2.17 to Group-G-4.17(Group-B<C<A<D<E=F<G). Mean Histological grades: Group-B-3.33 to Group-G-7.00(Group-B<C=D<A<E<F<G). Conclusions: Addition of local rhBMP-2 along with bone marrow stem cells improves osteoporotic fracture healing significantly($p<0.05$) and the healing pattern is better than the normal fracture healing which is further augmented by systemic G-CSF injections($p<0.05$). Oral alendronate and local infiltration of stem cells improve osteoporotic fracture healing, although statistically insignificant($p>0.05$).

Date: 2012-11-30

Session: Research: Biomaterials VI

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 31794

A NOVEL BIO-DEGRADABLE POLYMER MEMBRANE TO CONTROL THE DEGRADATION OF MG-BASED METALLIC BIOMATERIAL FOR ORTHOPAEDIC IMPLANTATION

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Biodegradable metallic materials such as magnesium-based alloys are the potential candidates of replacing the currently used non-degradable metallic implants. However, the fast degradation rate and hydrogen gas release may hinder its use. To remedy these complications, our group has developed a controllable biodegradable polymer coating, polycaprolactone (PCL), onto magnesium alloy surface. This study aims to investigate the surface mechanics, in-vitro and in-vivo properties of the modified magnesium alloys. The polymer membrane was prepared by mixing 3.33% and 2.5% (w/v) PCL and dichloromethane. A 60°C heat treatment was conducted after the deposition process on the magnesium alloys. The surface adhesiveness of the heat-treated membrane was evaluated by scratching and tape tests. The corrosion resistance properties of the polymer-deposited magnesium alloys were studied by electrochemical test. The in-vitro and in-vivo responses were studied by GFP osteoblast culture and rat model for 2 months. The corrosion resistance of the treated magnesium alloy was enhanced, as the corrosion current density of the treated sample was 10-fold lower than that of the untreated samples. Moreover, the treated surface was well tolerated by osteoblasts in-vitro and high volume of new bone formation was found on the treated samples in-vivo. The surface adhesiveness of polymer coating was significantly improved by heat treatment procedures. In conclusion, the new polymer coating was able to enhance the corrosion properties of magnesium alloy as well as its conductivity in-vitro and in-vivo.

Date: 2012-11-30

Session: Research: Biomaterials VI

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 31410

THE OSTEOGENESIS OF BACTERIAL CELLULOSE SCAFFOLD LOADED WITH BONE MORPHOGENETIC PROTEIN-2

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Bacterial cellulose (BC) is a new type of biological nano-fiber material with attractive physicochemical property and biocompatibility. Its fiber is also consistent with the collagenous fiber of bone. To explore whether BC could be a localized delivery system to increase the local concentration of cytokines for tissue engineering, in this study, we prepared the BC scaffold from a bacterial strain and investigated the osteogenesis of the BC scaffold loaded with bone morphogenetic protein-2 (BMP-2). The data showed that BC had a good biocompatibility and induced mouse fibroblast-like C2C12 cells to osteogenically differentiate in the presence of BMP-2 in vitro, which was demonstrated by the assay of alkaline phosphatase (ALP) activity. The concentrations of BMP-2 affected osteogenesis of C2C12; within a certain range (0~3 μ g/scaffold), the osteogenic activity of C2C12 was positively related to the concentrations of BMP-2. In vivo, the ectopic bone formation in rats was applied. Histologically, subcutaneous implantation of the BC scaffolds carrying BMP-2 showed more bone formation and higher calcium deposit concentration than the ones of the BC scaffolds alone at 2 and 4 weeks, respectively. The ALP activity assay and the measurement of calcium concentration of BC scaffolds further confirmed that new bone developed in the BC scaffolds carrying BMP-2 more than in the BC scaffolds alone. Our studies suggest that BC is a good localized delivery system for BMPs and would be a potential candidate in bone tissue engineering.

Date: 2012-11-30

Session: Research: Biomaterials VI

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 30845

INCREASED BONE FORMATION IN A PORCINE CRITICAL SIZE DEFECT WHEN USING HYALURONIC ACID AND TCP COATED POLYCAPROLACTONE SCAFFOLDS SEEDED WITH AUTOLOGOUS DENTAL PULP STEM CELLS

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Introduction: Dental pulp tissue has been hypothesized as an alternative source of autologous adult mesenchymal stem cells for use in bone tissue engineering. Methods: The scaffolds for cell seeding were comprised of the polymer, polycaprolactone (PCL), bioplotting into a three-dimensional grid structure (bioplotting scaffold). Afterwards, a new scaffold was created by infusing the bioplotting scaffold with hyaluronic acid + TCP and afterwards freeze dried to create a micro-porous hydrophilic coating (HT scaffold). A total of 14 skeletally mature 1-year-old Danish landrace pigs were used with termination 5 weeks post surgery. One month prior to surgery, bone marrow from the proximal femur and one molar tooth was extracted from each individual pig. Mononuclear cells were isolated from each extraction source and differentiated into osteogenic lineage. A total of six 10 mm in depth and 15 mm in diameter non-penetrating holes were drilled in the calvaria. Three paired studies were chosen; 1.) empty defect and HT scaffold, 2.) HT scaffold and bioplotting scaffold 3.) HT scaffolds seeded with dental pulp stem cells (DPSCs) and HT scaffold seeded with bone mesenchymal stem cells. After termination, the specimens were μ CT scanned and bone volume to total volume (BV/TV) was determined. Results: μ CT data showed significant more bone formation in the defect containing the HT scaffold compared to the empty defect ($p=0,0203$). HT scaffolds showed larger BV/TV compared to bioplotting only ($p<0,0001$). When comparing the HT scaffolds seeded with autologous stem cells, the defect containing scaffolds seeded with DPSCs had a significantly higher BV/TV (0,009).

Date: 2012-11-30

Session: Research: Biomaterials VI

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 32553

COMPUTER AIDED CUSTOMIZED CREATION OF POROUS IMPLANTS

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Introduction: The design of porous implants and search for the optimal pore shape and size is a topic of ongoing research within the orthopedic community. In a 2009 review paper by Hollister it is reported that two of the six main requirements for bringing new porous implants to the clinic are i) the need for a more complete understanding of material and design requirements and ii) the need to better integrate computational design techniques with manufacturing methods. These two requirements are addressed herein. Methods: This paper presents a novel method to obtain fully personalized scaffold designs, with varying porosity, starting from patient-specific medical imaging data. This method is illustrated on the design of a custom revision hip implant based on a CT scan, using Mimics Innovation Suite software. The resulting porous implant was produced via additive manufacturing (AM) techniques. Results & discussion - From patient specific data a high quality 3D triangle mesh model is calculated. A porous unit cell which can be designed by the user, is patterned into a geometry which envelopes the separated anatomy from above. A virtual cutting operation on triangle mesh level between the separated anatomy and the patterned grid results in a personalized porous implant structure. AM was successfully employed to produce the implant with controlled porosity. Conclusions – This method, with unlimited freedom in unit cell structure can increase the speed of research and understanding of the influence of implant pore size and shape on implant mechanical properties and fixation after implantation.

Date: 2012-11-30

Session: Research: Biomaterials VI

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 33191

EVALUATION OF ACHILLES TENDON REPAIR ENHANCED WITH AMNIOTIC MEMBRANE-DERIVED ALLOGRAFTS

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Introduction: Tendon ruptures are common in all populations; however, tendon has limited repair capacity. Current clinical treatment involves suture repair followed by immobilization. Human amniotic membrane functions as a natural biological covering that promotes cellular migration, which can enhance attraction of host cells and trophic factors to an injury site. We believe integration of amniotic allograft with suture-repaired tendon will enhance tendon repair capability. Methods: 51 male Sprague-Dawley rats underwent posterior longitudinal incision to expose the Achilles tendon, which was then completely laterally transected and suture-repaired via a modified Mason-Allen stitch (all sutures used: 4-0 vicryl). Two experimental groups were formed: "Sutures-Only" and "Sutures+Allograft." An allograft strip was inserted between the repaired tendon and calcaneus, hydrated with saline, and fixated using suture. At 1, 2, and 4-week post-operative time points, tendons were harvested for either histological (n=24; H&E) or biomechanical analysis (n=27) via an Instron uniaxial testing frame. Results: Biomechanical testing demonstrated increases in maximum load and related biomechanical measures over the 4-week period. Specimens repaired with allograft demonstrated superior biomechanical measures compared to suture-alone repairs. Histological specimens are still pending arrival and will be scored. Discussion: This study represents the first orthopaedic application of amniotic material. We believe that pending histological results, as well as added subjects, will enhance our positive findings. We plan to utilize cultured amniotic tissue next. Mesenchymal stem cells from amniotic tissue have proven to be multipotent (osteogenic, chondrogenic), improving the utility of amniotic tissue as an in-vivo wound covering for treatment of tendon ruptures.

Date: 2012-11-30

Session: Research: Biomaterials VI

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 31784

IN-VIVO EFFECTS OF MICRO-ARC OXIDATION ON MAGNESIUM-BASED IMPLANTS

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An optimal biodegradable implant design would initially deliver sufficient strength to hold the replaced fracture and subsequently degrade when callus takes over body load. Micro-arc oxidation (MAO) modifies implant surface resulting in the formation of a physically protective oxide film on the metal surface to enhance corrosion resistance. This study aimed to investigate the in vivo degradation effects of MAO surface modification of magnesium-based implants in a rat model. Twenty rats got implanted either a magnesium pin ZX50 with or without MAO surface treatment transcortical into femoral diaphysis (n=8). Volume and surface changes of the pins were assessed by μ CT up to 24 weeks. Additionally histological thin slices and SEM pictures were performed. The average daily degradation rate was significantly decreased in the MAO group within the first week ($p=0,002$). Consequently higher pin volumes of MAO implants occurred. Between weeks 3-4 ($p=0,005$) and 4-8 ($p=0,046$) the degradation process of MAO implants became faster than in the unmodified group. This is in correlation to larger implant surfaces of MAO implants at week 4 ($p=0,015$). The quotient surface/volume shows clearly that MAO degradation rate takes over the unmodified group between week 3 and 4, resulting in an overall faster degradation of MAO implants. SEM pictures showed several corrosion pits on the MAO implant surface. Histologic slices showed increased bone attachment on the MAO implants. In conclusion, the effects of MAO surface modification are desirable for biodegradable implants in osteosynthesis to ensure fracture stabilisation during bone healing and fast degradation after consolidation.

Date: 2012-11-30

Session: Research: Biomaterials VI

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 31681

EARLY BONE IN-GROWTH ABILITY OF COBALT-CHROMIUM BASED ALLOY IMPLANTS LOADED WITH TISSUE-ENGINEERED BONE

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Introduction: As Cobalt-Chromium (CoCr) based alloys possess superior stiffness and toughness, they remain one of the most common implant materials for the bearing surface in the orthopedics industry. However, released metal ions from CoCr based alloy implants can influence cells involved in the complex cellular and molecular response at the bone-implant interface, leading to aseptic loosening. Therefore, we decided to apply a tissue engineering strategy to solve the above problem. Material and Methods: Rabbit mesenchymal cells were seeded on one side the CoCr based alloy implant surface, whereas the mesenchymal cells were not seeded on other side. The mesenchymal cells were further cultured in osteogenic condition resulted in the appearance of osteoblasts and bone matrix on the implant surface. Thus, we succeeded to generate tissue-engineered bone on one side of the implant. The tissue engineered CoCr implants were implanted into rabbit bones defects. Three weeks after the procedure, evaluation of mechanical bonding, histological examination and electron microscope analysis were performed. Results: Histological examination and electron microscope analysis of the noncell-loaded implant surfaces showed no bone infiltration into the implant gap. However, the cell-loaded implant surfaces exhibited abundant new bone infiltration into the implant gap with mechanical bonding. In the mechanical test, the average failure load of the cell loaded side was significantly greater than that of the non-cell loaded side. Discussion and Conclusion; The present findings indicate early bonding between the implant and bone even three weeks after the procedure.

Date: 2012-11-30

Session: Research: Biomaterials VI

Time: 10:30 - 12:00

Room: Rashid B

Abstract no.: 31677

EXPERIMENTAL AND CLINICAL RATIONALE FOR THE USE OF THE MATERIAL COLLAPAN AND PLATELET-RICH PLASMA TO ENHANCE THE REPARATIVE OSTEOGENESIS

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Very often in clinical, for replacement bone defects, we use calcium-phosphate materials. Platelet-Rich Plasma (PRP) is used for activating of bone formation. The aim of this work was to study the healing of segmental defects of rabbit radius with the implantation of PRP and Collapan (biocomposite material containing the synthetic nanostructured hydroxyapatite, collagen, antibiotic). Experimental-morphological studying was on 60 rabbits. In the first group of animals the defect heal on their own, in the second group, PRP was injected into the bone defect, in the third group- Collapan; in the fourth group- mix of PRP and Collapan. The material from the bone defects were investigated histologically at 30-90 days after surgery. The morphological study showed that 1 month after surgery in the bone defect the second and especially the first groups of animals, signs of osteogenesis were weakly expressed, whereas in the third and, especially, in the fourth group were active formation of osteoid directly onto the surface of the implanted pellets of Collapan. At 60-90 days the formation of newly formed bone and its remodeling with the formation of lamellar structures and oriented osteons increasingly happening in the third and, especially, in the fourth group of animals. The increase in bone mass in these groups combined with the gradual resorption of the granules Collapan. Using the mix of Collapan and PRP in clinical practice has allowed in 47 patients with slowly consolidating fractures and 109 patients with false joints to obtain a positive effect in 97.8% of cases.

Date: 2012-11-30

Session: 28 - Mini Symposium - Sports Traumatology: Platelet Rich Plasma - Fact or Fiction

Time: 16:30 - 18:00

Room: Rashid B

Abstract no.: 31604

THE ROLE OF PLATELETS IN ACHILLES TENDON TREATMENTS – A SYSTEMATIC REVIEW AND META-ANALYSIS OF IN VIVO TRIALS.

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Study Question: To systematically review the current in-vivo evidence for the use of platelet-concentrates (PRP) in the treatment of Achilles tendinopathy and Achilles tendon ruptures. Methods: A systematic search of PubMed, CINAHL, EMBASE, CCTR and CDSR was performed for animal and human studies on the effect of platelet-concentrates in the treatment of Achilles tendinopathy and ruptures using the terms “Achilles tendon and platelet”. Results: The systematic search revealed a total of 149 papers. After excluding duplicates and cases of overlapping data, studies not focusing on in vivo evidence in terms of treatment or outcome, studies without any intervention, studies with unacceptable high attrition, one Chinese and one Swedish study, the remaining 14 manuscripts were included. Conclusion: The current evidence provides strong evidence in support of a statistically significant effect of platelet concentrates in the treatment of Achilles tendon ruptures in vivo, consistent with a medium to large sized effect. This effect is most likely attributable to fastened and enhanced scar tissue maturation. There was no evidence for a beneficial effect of platelets in Achilles tendinopathy.

Date: 2012-11-30

Session: 28 - Mini Symposium - Sports Traumatology: Platelet Rich Plasma - Fact or Fiction

Time: 16:30 - 18:00

Room: Rashid B

Abstract no.: 32584

A COMPARISON OF POST INJECTION PROTOCOLS AFTER INTRATENDINOUS ACHILLES PLATELET RICH PLASMA INJECTIONS: A CADAVERIC STUDY

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Introduction: Different postinjection protocols have been used after intratendinous Achilles tendon (AT) injections, (difference in) distribution after injection has not been studied. Purpose: to evaluate the distribution of intratendinous injected PRP after 15 minutes of prone resting (rest) versus AT injection with manually manipulations (immediate weight bearing). Methods: 10 cadaveric lower limbs were injected under ultrasound guidance with Indian blue-dyed PRP. All injections were placed into the AT at midportion level; five limbs were manually manipulated with 100 repetitive ankle movements; five limbs were placed prone (rest group) for 15 minutes. After either post-injection protocol the limbs were anatomically dissected and evaluated on presence and distribution of PRP. Results: All injections of the manipulation protocol resulted in a gradual distribution of PRP throughout the entire transverse plane of the tendon; all showed infiltration of the area between the paratenon and AT. Four specimens in this group showed involvement of the pre-Achilles fat. The median craniocaudal spread was 135 mm (range:115-170). The median craniocaudal spread of PRP in the rest group was 140 mm (125-190). All injections resulted in PRP infiltration of the Achilles tendon and the area between the paratenon and AT. In four out of five tendons the PRP was distributed throughout the entire transverse plane of the tendon. Three of five limbs showed traces of PRP in pre-Achilles fat pad. Conclusions: Every Achilles tendon was gradually infiltrated with PRP after midportion Achilles tendon injection. No difference was found in craniocaudal spread between a 15 minute rest post injection protocol versus 100 manipulations after injection.

Date: 2012-11-30

Session: 28 - Mini Symposium - Sports Traumatology: Platelet Rich Plasma - Fact or Fiction

Time: 16:30 - 18:00

Room: Rashid B

Abstract no.: 32807

SURGICAL DECOMPRESSION OF ACHILLES TENDON FOR TREATMENT OF NON-INSERTIONAL ACHILLES TENDINOPATHY- RESULTS IN A SERIES OF PROFESSIONAL FOOTBALLERS.

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Introduction: Achilles tendinopathy is one of the commonest foot and ankle pathologies in sportspersons. Most cases respond to conservative treatment with physiotherapy, however if symptoms persist, surgical decompression is an option with favourable results. Methods: We retrospectively reviewed 11 cases of surgical decompression of Achilles tendon in 8 professional footballers performed over 9 years. All patients were male with mean age of 27 years (range 21 to 30 years). All presented with symptomatic noninsertional Achilles tendinopathy, confirmed by MRI or US scans. Mean duration of symptoms before surgery was 15 months (range 3 to 24 months). All cases had a trial of conservative treatment in the form of physiotherapy or steroid injection prior to surgery. Surgical decompression and debridement of the Achilles tendon was performed via a posteromedial incision. The paratenon was repaired in all cases. Post-op rehabilitation involved immobilisation in below knee cast for 6 weeks, 2 weeks non-weight bearing followed by 4 weeks full weight bearing. Results: 10 cases (7 patients) became asymptomatic in mean period of 8 weeks (range 5 to 16 weeks). One patient remained symptomatic who continued to play professional football. All 8 patients (11 cases) returned to playing professional football after surgery. One patient developed a post-operative neuroma which was treated with radiofrequency ablation. One patient developed paratendonitis which was successfully treated non-operatively. Conclusion: Results of Achilles tendon decompression for noninsertional tendinopathy in our series of professional footballers are encouraging. It should be considered a treatment option if this condition is recalcitrant to conservative measures.

Date: 2012-11-30

Session: 28 - Mini Symposium - Sports Traumatology: Platelet Rich Plasma - Fact or Fiction

Time: 16:30 - 18:00

Room: Rashid B

Abstract no.: 32880

DOES ULTRASOUND GUIDED STEROID INJECTION ALTER THE OUTCOME OF REFRACTORY TENNIS AND GOLFERS ELBOWS?

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Introduction: Tennis and Golfers elbows (TE, GE) are difficult conditions to treat. Ultrasound guided steroid injection (UGSI) is one of the treatment modalities in treating refractory TE and GE. We present our clinical experience in treating patients with TE and GE with UGSI. Methods: Patients with persistent TE and GE treated with UGSI (Marcaine and kenalog) at a tertiary centre were retrospectively reviewed. Mean follow-up was 4 months (Range 2 - 21 months). Patients were assessed for pain relief, recurrence of symptoms and surgical release. Results: USGI was performed on 181 elbows (144 patients). There were 68 male and 76 female patients. Mean age 49.5 years (range 17 - 82). There were 144 TE and 37 GE. Following USGI, 155 (86%) elbows were reported to be completely pain free, 10 (5%) elbows experienced no improvement and 16 (9%) elbows encountered residual symptoms. However, a total of 98 (54%) elbows experienced recurrence of symptoms. For TE, symptoms recurred in 74/144 (51%) elbows at a mean interval of 5.8 months (95% CI: 4.6 to 6.9 months). For GE, symptoms recurred in 24/37 (64%) elbows at a mean interval of 4.2 months (95% CI: 3.4 to 5.0 months). Repeat USGI was associated with 83% recurrence rate followed by surgical release. USGI appears to be a beneficial short term measure. However, recurrence or failure to improve occurred in 68% of elbows. Repeat USGI is associated with high failure rate and surgical option should be explored in these refractory conditions.

Date: 2012-11-30

Session: 28 - Mini Symposium - Sports Traumatology: Platelet Rich Plasma - Fact or Fiction

Time: 16:30 - 18:00

Room: Rashid B

Abstract no.: 32410

COMPARISON OF SHORT TERM RESULTS OF SINGLE INJECTION OF AUTOLOGOUS BLOOD AND STEROID INJECTION IN TENNIS ELBOW: A PROSPECTIVE RANDOMIZED TRIAL

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It has been recently reported that local injection of autologous blood in tennis elbow offers a significant benefit. The objective of our study was assessment of efficacy of autologous blood injection versus local corticosteroid injection in the treatment of tennis elbow. A double blind, prospective randomised parallel group trial was undertaken. 50 consecutive patients of untreated lateral epicondylitis were enrolled. Randomisation was done on alternate basis and two groups were instituted, first one receiving steroid injection and second one injection of autologous blood. Both groups were evaluated at 2 and 6 weeks for pain relief and stage of disease. Baseline evaluation showed no difference between the two groups (chi square test, $P > 0.05$). Between group analysis at 2 weeks showed no difference in pain relief and Nirschl stage (unpaired t test, $P > 0.05$). Evaluation at 6 weeks demonstrated a significant decrease in pain levels and stage of disease in blood group (unpaired t test, $p < 0.05$). Autologous blood injection was more effective than steroid injection in the short term follow up in tennis elbow.

Date: 2012-11-30

Session: 28 - Mini Symposium - Sports Traumatology: Platelet Rich Plasma - Fact or Fiction

Time: 16:30 - 18:00

Room: Rashid B

Abstract no.: 30910

EFFECTIVENESS OF RADIAL SHOCK WAVE TREATMENT OR TISSUE-SPECIFIC PLANTAR FASCIA-STRETCHING IN PATIENTS WITH CHRONIC PLANTAR HEEL PAIN

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Purpose: To compare the effectiveness of two management strategies for chronic heel pain. Methods: 152 patients with chronic plantar fasciopathy were assigned to receive repetitive low-energy radial shock-wave therapy (SWT) without local anesthesia (Group 1, n=73) or to receive repetitive SWT without local anesthesia and to perform an eight-week plantar fascia-specific stretching program (PFSS) (Group 2, n=79). All patients completed the seven-item pain subscale of the validated Foot Function Index and a subject-relevant outcome questionnaire. Patients were evaluated at baseline, and at two, four, and fifteen months from baseline. Primary outcome measures were a mean change in the Foot Function Index sum score at two months from baseline, a mean change in item '2' (pain during first steps) on this Index, and satisfaction with treatment. Results: At two months from baseline, the Foot Function Index sum score showed significantly greater changes for the patients managed with SWT plus PFSS than those managed with SWT alone ($p < 0.01$), as well as individually for item 2 ($p < 0.01$). Twenty-four patients in Group 1 (32%) versus thirty-seven patients in Group II (48%) were satisfied with the treatment ($p < 0.01$). This significant difference persisted at four months. At 15 months from baseline, no significant between-group difference was measured. Conclusions: A program of manual stretching exercises specific to the plantar fascia in combination with repetitive low-energy radial shock-wave therapy is more efficient than repetitive low-energy radial shock-wave therapy alone for the treatment of chronic symptoms of proximal plantar fasciopathy.

Date: 2012-11-30

Session: Miscellaneous: Infection Tuberculosis

Time: 16:30 - 18:00

Room: Rashid C

Abstract no.: 32232

LIMITED POSTERIOR DECOMPRESSION AND TRANSPEDICULAR FIXATION FOR TREATMENT OF POTT'S PARAPLEGIAS INVOLVING THORACOLUMBAR SPINE.

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Introduction: Spinal tuberculosis have been managed with various modalities of treatment ranging from only anti-tubercular drugs to radical procedures like anterior or combined approach surgeries. However the former method is met with unacceptable kyphosis many a times and the later has been considered to be too drastic. In this series authors have shown the results of posterior decompression with pedicle screw fixation which is less invasive in nature and can be useful in some selective cases of Pott's paraplegia. Methods: The 18 cases were operated with posterior decompression with minimal bone removal and posterior fixation along with anti-tubercular drug regimen. All of them had varying degrees of neurological deficits (four with Frankel grade A, eight Frankel B, four Frankel C and two Frankel D) and short segment involvements with <50% vertebral body destruction and mild kyphosis (Mean 17.80). Short segment pedicle screw fixation and decompression were done with correction of kyphosis. Results: At a mean follow-up of 39.8 months, the final kyphosis correction was maintained at 12.60 after a mean loss of 2.50 (32.5% correction) after operation and 55.5% achieved fusion. Seventeen patients (94.4%) recovered neurologically to near normal with a VAS score for pain to 0 to 1 in all cases. There were no intra-operative and minimal post-operative complications. Conclusion: The results of the procedure seem to be satisfactory and safe in early active cases of thoracolumbar spinal tuberculosis with less destruction of vertebral bodies and minimal kyphosis.

Date: 2012-11-30

Session: Miscellaneous: Infection Tuberculosis

Time: 16:30 - 18:00

Room: Rashid C

Abstract no.: 33054

DIAGNOSIS OF SKELETAL TUBERCULOSIS BY ESTIMATION OF MTB SPECIFIC ANTIGENS AND ANTIBODIES IN SERUM BY ELISA BASED TESTS

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We evaluated diagnostic potential of two antigens, early secretory antigenic target-6 (ESAT-6), culture filtrate protein-10 (CFP-10) and culture filtrate protein-21 (CFP-21) separately, and also short term culture filtrate (STCF) and circulating immune complexes (CICs) on the basis of antigen and antibody detection by enzyme-linked immunosorbent assay in serum samples from 40 osteoarticular TB patients. The results were compared with the standard methods of diagnosis of osteoarticular tuberculosis i.e. culture, staining, radiography, clinical features etc. All three RD antigens were recognized to an appreciably lower extent ranging from 10-15% by the sera of osteoarticular TB patients when tested individually in separate ELISA. Then we tested the antibodies to the short term culture filtrate (STCF) of *M.tuberculosis* in the sera. We achieved a Sensitivity of 48.89% and Specificity of 95.24% with a positive predictive value (PPV) of 0.92. To detect antibody bound RD antigens in the circulating immune complexes CIC ELISA was done, which indirectly gave the measure of the presence of RD antigen specific antibodies in the complexes. By CIC ELISA Sensitivity of 34.09% and Specificity of 96.77%, with a positive predictive value 0.93 was obtained. We achieved 64.44% sensitivity and 92.86% specificity by simultaneous detection of free antibodies against Mycobacterial STCF proteins in the serum and RD antigens present in the circulating immune complexes precipitated from the serum of the same individual.

Date: 2012-11-30

Session: Miscellaneous: Infection Tuberculosis

Time: 16:30 - 18:00

Room: Rashid C

Abstract no.: 32594

TUBERCULOSIS PRESENTING AS AN OSTEOLYTIC BONY LESION IN THE FOOT

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Background: Foot involvement in Osteo-articular tuberculosis is uncommon and isolated bony involvement of foot bones with an osteolytic defect is even rarer; diagnostic and therapeutic delays can occur, worsening the prognosis. We present a retrospective series of osteolytic variety of foot tuberculosis in 24 patients. Materials and Methods: Over 20 years, we encountered 24 purely osteolytic bony defects (11 calcaneus, 4 cuboid, 2 cunieforms, 1 talus, 3 metatarsals, 3 phalanges). An attempt for tissue diagnosis, using PCR, AFB staining, culture and histopathology, was made in all cases and 23 of 24 cases were diagnosed of suffering from tuberculosis. Surgical intervention was reserved for patients with either a juxta-articular focus threatening to involve a joint or impending collapse of a midfoot bone. Results: Fifteen cases had an osteolytic lesion on radiographs resembling a space-occupying lesion, 5 had patchy osteolysis, while 4 showed flaky sequestra; one patient had a double lesion. Anti-tubercular chemotherapy after biopsy was sufficient to heal the lesion in 19 cases, while in 5 cases surgical debridement needed to be done. At final follow-up of 2-15 years, there were no recurrences and all patients were free from pain with no restriction of movements. Six patients complained of occasional pain during walking on uneven ground. Conclusion: When tuberculous pathology is limited to bone, the prognosis is better, as there is less deformity and hence less residual pain and disability. Since isolated osteomyelitis is seen only in the early stages, early diagnosis and therapy is imperative for good long-term results.

Date: 2012-11-30

Session: Miscellaneous: Infection Tuberculosis

Time: 16:30 - 18:00

Room: Rashid C

Abstract no.: 32761

TUBERCULOSIS OF THE SHOULDER JOINT

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Introduction: bone tuberculosis is less frequent than pulmonary damage. The achievement of the shoulder articulation is rare. Methods: we report 5 cases of shoulder tuberculosis in 2 men and 3 women with an average age of 33. Pain and loss of joint mobility were constant signs. Radiology and biology helped to suspect the diagnosis. The histology allowed to pose the diagnosis. All patients received antibacillary chemotherapy for 6 months. Results: With a decline of 3 years, the results obtained in our patients were found satisfactory with a total disappearance of pain in all the cases. Examination of joint mobility has shown a remarkable improvement in three cases seen and treated early with a nearly disappearance of the radiological lesions, while the two others kept a stiff shoulder with a stabilization of radiological image conclusion: tuberculosis of the shoulder can be difficult to diagnose in the early stages. If not diagnosed early, bony tuberculosis may reduce the quality of life. Therefore, tuberculosis should be suspected in cases of long-standing pain in the shoulder. It is necessary to keep tuberculosis in the differential diagnosis of several osseous pathologies. Arthrodesis should be reserved only for lesions that fail to heal after adequate chemotherapy and rehabilitation.

Date: 2012-11-30

Session: Miscellaneous: Infection Tuberculosis

Time: 16:30 - 18:00

Room: Rashid C

Abstract no.: 32604

TUBERCULOSIS OF THE ELBOW: A CLINICO-RADIOLOGICAL ANALYSIS

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Background: The incidence of Tuberculosis (TB) of elbow is 2-5% of all skeletal locations. We present a retrospective clinico-radiological analysis of 38 cases (40 elbows) of TB of elbow joint. Materials and Methods: The patients presented with pain, swelling and loss of motion; two cases had bilateral involvement. The average delay between onset of symptoms and presentation was 8 months. The elbows were classified according to modified Martini's radiological classification, which distinguishes between osseous lesions close to joint line (e.g. coronoid, condyles) and lesions away from the joint line (e.g. epicondyles, olecranon). We modified the classification to subdivide into para-articular bony lesions that had invaded the joint and those that were threatening to cause joint destruction. All patients received antitubercular chemotherapy and immobilization in above-elbow plaster slab for 4–8 weeks. Twenty patients underwent surgical interventions (synovectomy, intra-articular debridement). Results: The average follow up period was 5.3 years (range, 1.5-14.2 years). The range of movement at final follow up averaged 107° for stage 2, 90° for stage 3A, 47° for stage 3B and 32° for stage 4. Range of supination and pronation was less satisfactory as compared to flexion and extension and all elbows with bony involvement had less than 90° arc of supination and pronation. Conclusion: The surgical intervention could appreciably alter the outcome especially in patients with extra-articular involvement close to the joint. We have classified this subgroup separately.

Date: 2012-11-30

Session: Miscellaneous: Infection Tuberculosis

Time: 16:30 - 18:00

Room: Rashid C

Abstract no.: 31490

TUBERCULOSIS OF SACROILIAC JOINT EARLY DIAGNOSIS AND TREATMENT

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Background: Only few reports with good number of patient are available in literature often late in its course when joint has already got destructed. Purpose of this study is to review results of follow up of twenty-two cases of this disease, in very early stage of this disease. Methods: A total of twenty- two, diagnosed patient of Sacroiliac joint tuberculosis enrolled, were treated and followed for two years. Suspected cases with symptoms around SI joint were investigated. Diagnosis was established using MRI, PET and CT guided FNAC. PCR used to confirm presence of tubercle bacilli. Patients were evaluated by serial radiograph and improvement in symptoms on each visit during of follow up. Results: Most of the patient required chemotherapy for at least 18 months. Healing of the lesions was visible on radiograph as gradually increasing bone density around SI joint. Bony ankylosis was not the usual out come as in case of late diagnosis. Only patient with advanced disease underwent ankylosis of SI joint. Conclusion: Early diagnosis in the course of disease can prevent SI joint destruction and provide good results in functional outcome. Key words: Sacroiliac joint; Tuberculosis; Anti-Tubercular therapy.

Date: 2012-11-30

Session: Miscellaneous: Infection Tuberculosis

Time: 16:30 - 18:00

Room: Rashid C

Abstract no.: 31401

SACROILIAC JOINT TUBERCULOSIS: A REVIEW OF 20 CASES

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Introduction: Sacroiliac joint is a very rare site of tubercular infection and accounts for less than 10% of all skeletal tuberculosis. Diagnosis of sacroiliac tuberculosis is often missed at an early stage because it is frequently confused with other more common causes of pain from back or hip joint. Few case series and reports are available in literature on sacroiliac tuberculosis. **Methods:** We studied retrospectively records of 20 cases of sacroiliac joint tuberculosis. Plain radiographs and MRI of the sacroiliac joints were studied for all the patients. Sample for histological diagnosis was obtained with the help of a computed tomography aided needle biopsy. Four drug antitubercular treatment was started once the sample had been obtained. Total duration of antitubercular medications was 12 months. **Results:** There were 13 males and 7 females. Mean age at presentation was 25 years (range 15-38 years). Mean duration of symptoms was 2.5 months. Multifocal skeletal tubercular infection was seen in 2 patients. All patients responded to antitubercular medications. Improvement in pain was seen at the mean of 6 weeks from start of anti-tubercular drugs. Radiological evidence of healing was evident at mean of 10 months after starting treatment. Bony union was achieved in 10 and fibrous union in 8. Two patients, where sacro-iliac joints failed to fuse, had undergone surgery (sacroiliac joints fusion with transarticular rods) for fusion of the sacroiliac joints. **Conclusion:** Most cases respond favourably to drug therapy. Surgery helps to achieve fusion in cases where there is persistent of pain.

Date: 2012-11-30

Session: Miscellaneous: Infection Tuberculosis

Time: 16:30 - 18:00

Room: Rashid C

Abstract no.: 32592

TUBERCULOSIS OF THE MIDFOOT – A REVIEW OF 10 CASES.

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Isolated tuberculosis of the foot is an extremely rare entity present in less than 3% of cases. Tuberculosis has been described as a great imitator and in the foot, it can mimic a pyogenic osteomyelitis, tumour or madura foot. Knowledge of different presentations of tuberculosis in the foot is important to help reach the diagnosis. Early diagnosis & treatment is important to prevent the spread of disease in the foot and can lead to excellent healing and good functional results. There have few series reporting the incidence and follow up of isolated midfoot tuberculosis excluding the ankle. We present a series of 10 cases with varied presentations of tuberculosis of the midfoot. MRI and CT scans help in early diagnosis before the plain radiography features set in. When involving the tarsal region, a diffuse involvement is most common, presenting as osteoporosis and coalescence of the tarsal bones as seen in rheumatoid. Since the lesion in the foot is paucibacillary, isolation of AFB is rarely positive. Diagnosis is mostly confirmed on histopathology showing a granulomatous lesion. Medical treatment in the form of anti-tubercular therapy and immobilization in the acute phase results in fair function in the foot. None of the 10 cases required any secondary procedure for instability or residual pain in the foot.

Date: 2012-11-30
Session: Trauma: Hip I
Time: 08:30 - 10:00
Room: Rashid D

Abstract no.: 32897

IMPLANT SELECTION IN SUBTROCHANTERIC FRACTURES: STILL A DILEMMA

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INTRODUCTION & PURPOSE: Subtrochanteric fractures are difficult to manage and associated with many complications. Various implants have been designed to address these fractures with variable success but the choice of implant in different fracture patterns have not been defined clearly. We suggest an algorithm for management of Subtrochanteric fractures. **MATERIALS AND METHODS:** We include 28 cases in the study. All the fractures were fixed with various implants based on fracture pattern, achievement of closed reduction and surgeon's familiarity with the procedure. Out of the 28 cases, in 13 cases biological DCS fixation, in 2 cases open reduction and DCS fixation, 8 cases DHS fixation and in 5 cases RECONSTRUCTION NAIL fixation was done respectively. **RESULTS:** In 27 cases fracture union was achieved without bone grafting and in one case where open reduction and DCS fixation was done went for delayed union and failure. **DISCUSSION:** Subtrochanteric fractures of femur demand a special consideration in implant selection, achieving closed reduction and surgical technique. Among these we suggest an algorithm for choice of implant. We followed Seinsheimer's classification. For type I, II and III fractures if closed reduction is achieved reconstruction nail is our choice of implant and if not, our choice is biological DCS fixation. In type IV and V fractures if closed reduction is achieved biological DCS is advised and if not biological DCS fixation and subperiosteal bone grafting is our choice.

Date: 2012-11-30
Session: Trauma: Hip I
Time: 08:30 - 10:00
Room: Rashid D

Abstract no.: 32076

CERCLAGES IN PERIIMPLANT FRACTURES ABOUT THE TIP OF GAMMA NAIL – AN ALTERNATIVE PROCEDURE?

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Background: Due to aging societies an increased frequency of periimplant fractures must be expected. Wire cerclages are occasionally used for fixation of oblique fractures at the implant site. The Titanium Compression Cerclage Gundolf (CCG) may provide greater primary stability. We set out to compare these two methods regarding their primary stability in fractures at the tip of a gamma nail. Materials and Methods: A biomechanical cadaver model was designed. Fracture was simulated by oblique osteotomy at the tip of an implanted gamma-nail. 3 CCGs (study group) vs. 3 stainless steel wires (control group) were mounted for fixation of the fracture. After that the cadaver femora were fixed in a servohydraulic testing machine. Static loading (1000N, 30sec) and cyclic loading (1000N, 3Hz, 10.000/100.000 cycles) was applied. Third, a destructive test gave load to failure. Results: N=8 pairs of femurs were tested, N=7 pairs were included in the study. There was no significantly greater fracture dislocation and load to failure in the control group. Loosening or failure of devices was not seen in any study group or test. A trend towards a lower maximum fracture dislocation was seen in the group of the CCGs. Conclusion: Both, CCGs and steel wire cerclages proved to give sufficient primary stability for fractures at the tip of gamma nails. The described method might prove to be a less invasive method for fixing periimplant fractures.

Date: 2012-11-30
Session: Trauma: Hip I
Time: 08:30 - 10:00
Room: Rashid D

Abstract no.: 30768

DYNAMIC HIP SCREWS VERSUS CEPHALOCONDYLIC INTRAMEDULLARY NAILS FOR UNSTABLE EXTRACAPSULAR HIP FRACTURES IN 2012: A SYSTEMATIC REVIEW OF RANDOMIZED TRIALS

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INTRODUCTION: Hip fractures in elderly patients are increasingly common. Optimum treatment for extracapsular fractures, especially unstable patterns, is frequently debated. A Cochrane review of RCTs investigating nailing versus DHS was undertaken in 2008. This concluded nailing has higher re-operation rates, therefore DHS should be used for extracapsular fractures. However, the review included trials from 1991 onwards which used older nailing systems. Therefore, this review followed on and we assessed randomized trials from 2008 onwards. **OBJECTIVES:** The purpose of this systematic review was to evaluate recent evidence investigating whether patients who sustain unstable extracapsular hip fractures have better outcomes when fixed using newer generation intramedullary nails or DHS. **METHODS:** A literature search of MEDLINE (PubMed), EMBASE and Cochrane library databases was undertaken to identify appropriate RCTs. The Cochrane methodological assessment scheme for RCTs and the revised CONSORT check-list for reporting randomized trials was used to critically appraise the methodological quality of the studies. Outcome measures included re-operation rate within 1 year, complications and functional scores. **RESULTS:** All RCTs meeting eligibility criteria were critically appraised and methodological quality was variable. All studies showed no significant differences in operation rates at one year between nail and DHS. There were no significant differences between functional scores and complications. Subgroup analysis revealed unstable fracture patterns had better outcomes in terms of re-operation rates with nailing. **CONCLUSION:** The findings of this systematic review do not definitively demonstrate superiority of either implant. However, unstable fracture configurations may have better outcomes with cephalocondylic nails.

Date: 2012-11-30
Session: Trauma: Hip I
Time: 08:30 - 10:00
Room: Rashid D

Abstract no.: 33180

OUTCOME OF FIXATION OF PERIPROSTHETIC FEMORAL FRACTURES USING A NEW GENERATION CABLE PLATE SYSTEM

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Aims: Management of periprosthetic femoral shaft fractures remains difficult and controversial. Various forms of treatment were introduced including immobilisation, traction, plating, revision surgery and fixation using a cable plate system. Only few retrospective studies with low patient numbers were published reporting result of cable plate fixation. **Methods:** We conducted a retrospective review of 21 consecutive patients (mean age 77 years) with 24 periprosthetic femoral fractures who underwent open reduction internal fixation using a new generation of cable grip system in a district general hospital between 2005 and 2011. We assessed clinical and radiological results and complication rates. **Results:** Most cases were classified as Vancouver B1 (15) and Vancouver C (7) fractures. Bony union of the femur was achieved in 23 cases (96%) in average 4 months postoperatively. Re-fracture of the femur occurred in 3 cases, plate breakage was observed in 2 cases and significant angulation of the femur was present in 3 cases. In 23 (96%) cases patients were able to achieve their preoperative mobility status. Removal of the cable plate system was required in one case due to persistent pain. **Conclusion:** Open reduction internal fixation of periprosthetic femoral fractures using this new generation cable plate system offers a safe method of fixation without the need for revision hip arthroplasty and was associated with a low complication rate.

Date: 2012-11-30
Session: Trauma: Hip I
Time: 08:30 - 10:00
Room: Rashid D

Abstract no.: 31644

MUSCLE PEDICLE PERIOSTEAL GRAFTING FOR THE TREATMENT OF THE NON-UNION OF THE FEMORAL NECK

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Vascularized periosteal flaps are known to have excellent osteogenic capacity but osteogenesis of periosteal flap rotated on the muscle pedicle has not been explored. The present study comprised of 38 patients (13 female, 25 male) with non-union and varying degree of absorption of the femoral neck treated at JIPMER, Pondicherry and L. N. Hospital, New Delhi from 1988 to 2010. The time interval between injury and the surgery was 2 to 18 months (average 7.5 months). Three patients had pathological fracture with extensive destruction in the femoral neck. All patients were subjected to open reduction and internal fixation of the fracture from posterior approach along with the myo-periosteal grafting of quadratus femoris muscle. Two patients had fixation augmented with the free single fibular strut. Out of seven patients with preoperative osteonecrosis of the femoral head, six patients did not show progression of the osteonecrosis while one patient showed revascularization with delayed collapse and mild flattening of the femoral head 10 years after the fracture union though was still asymptomatic. None of the patients showed signs of postoperative deterioration in the vascularity of the femoral head except one patient who developed osteonecrosis of the femoral head 14 months post operatively. Patients were followed up for 14 to 153 months with an average of 71 months. Fracture union occurred in 35 pts (92.1%). Time taken for fracture union was 2 to 10 months with an average of 4.9 months. The mean Harris hip score at last follow up was 93 (range 75-100).

Date: 2012-11-30
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Time: 08:30 - 10:00
Room: Rashid D

Abstract no.: 30769

**CHOICE OF IMPLANT IN INTERTROCHANTERIC AND
SUBTROCHANTERIC FRACTURES OF THE FEMUR**

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Introduction: The Sliding Hip Screw [SHS] has been the gold standard for internal fixation of all types of hip fractures in the past. However, due to the high complication rate in its use in unstable trochanteric fractures there has been a resurgence in the use of Intramedullary Hip Implants such as the Proximal Femoral Nail [PFN]. Intramedullary Hip Devices are further more stable as the axis of the implant lies closer to the hip centre providing a shorter lever arm making them more suitable for unstable trochanteric and subtrochanteric fractures. Material and Methods: There were two comparable cohorts of patients; one treated using the SHS and the other with the PFN, the choice of implant being decided based on the postreduction image intensifier films. Displaced intertrochanteric fractures as observed on the lateral view needing an open reduction and all basal fractures were treated using the SHS while well reduced unstable and stable intertrochanteric fractures were fixed using a closed technique with the PFN. Results: There were 50 proximal femoral fractures treated using the Proximal Femoral Nail and 25 with the Sliding Hip Screw. Complications were found in only three patients. Conclusions: Intramedullary Hip Devices such as the PFN are effective in the treatment of well reduced stable and unstable proximal femoral fractures. This study has shown that their use as compared to the SHS requires less operative time, produces negligible blood loss and leaves the patient with reduced postoperative pain.

Date: 2012-11-30
Session: Trauma: Hip I
Time: 08:30 - 10:00
Room: Rashid D

Abstract no.: 31059

MONITORING EARLY WARNING SCORES IN PATIENTS WITH NECK OF FEMUR FRACTURES

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Introduction: Elderly patients die as a result of inadequate care and this has been under scrutiny recently in the UK media. Aim: To assess whether un-well patients are managed appropriately and promptly according to Early warning score (EWS) guidelines and whether there is increased morbidity with untimely care. Method: Clinical Resource Efficiency Support Team (CREST) and local hospital guidelines (North Manchester General Hospital) for Early Warning Scores (EWS) were used to retrospectively. Assess EWS in thirty patients with neck of femur fractures. EWS chart and medical notes examined to gauge accuracy of chart and medical note documentation. Action Protocols from both guidelines were used to assess timely review of patients. Results: Seven patients scored four or more or three on a single parameter on their EWS sometime during their stay. In these, 71% had documented evidence of assessment by medical staff. However only 29% were reviewed within 30-60mins as per the Action Protocol. Only 14% of nurses documented that this group of patients needed immediate assessment. Average hospital stay, in patients who scored four or more or three on a single parameter, increased by nine days compared to those who had a lower score (27days vs.18 days). Conclusion: Although no patients died as a result of untimely management this group of elderly patients are more vulnerable to increased morbidity if not managed promptly. They undergo increased physiological stresses, which are exacerbated after hip surgery. By accurately following set guidelines morbidity, mortality and hospital stay can be reduced.

Date: 2012-11-30
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Room: Rashid D

Abstract no.: 32259

**VALGUS OSTEOTOMY COMBINED WITH FIBULAR GRAFT IN
NEGLECTED FRACTURE NECK FEMUR.**

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A prospective study of neglected femoral neck fracture in mostly young patients was conducted to evaluate whether our technique of valgus intertrochanteric osteotomy with fibular strut grafting and osteosynthesis with dynamic hip screw and double angle side plate can facilitate union with consistent satisfactory clinical outcomes. Forty one consecutive patients (27 males, 14 females) of neglected femoral neck fractures treated between April 2002 and December 2009 were studied. The average age of patients was 45.41 years (± 11.67 , range 20 - 62 years). The average interval since injury was 14 weeks (± 10.21 , range 4 – 44 weeks). The cases were evaluated radiographically and clinically. Average follow-up period was 32.5 months (± 8 , range 24 – 54 months). Radiographically union was seen in 39 patients at the non union site. The average time to radiographic union was 16.82 weeks (± 3 weeks, range 12 to 24 weeks). Average HHS was 19.9 (± 7.9 , range 10 – 35) preoperatively and 90.9 (± 10.35 , range 62 – 100) at the latest follow-up. At latest follow-up clinical outcomes were excellent in 31, good in 4, fair in 3 and poor in 3 patients. Our mechano-biological surgical technique is reproducible with radiographically union achieved in 95.12% cases (39 patients) at the non union site and consistent excellent or good functional outcome in 85% of patients over 32 month average follow-up. We recommend this procedure for neglected femoral neck fractures. Key words. Neglected fracture femur, fibular graft, abduction osteotomy.

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Room: Rashid D

Abstract no.: 32338

IDEAL MODALITY OF TREATMENT OF PROXIMAL FEMORAL FRACTURES IN ELDERLY OSTEOPOROTIC PATIENTS- PROXIMAL FEMORAL NAILING VS CEMENTED BIPOLAR HEMIARTHROPLASTY- 40 CASES.

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Background: Inter-trochanteric fractures commonly occur in elderly population & have high mortality rate. Problems with osteoporotic bone fractures includes geometry (grossly comminuted), high instability and difficult to treat. Conservative treatment in such patients lands up with complications d/t prolonged immobilization. Method: We have compared the two modalities viz. (Proximal Femoral Nailing) PFN & cemented hemiarthroplasty in these cases. Modality used depended upon two criteria: 1) Singh index & 2) reducibility and alignment achieved with skeletal traction. Patients with Singh index >3 and with traction x-ray showing reducible fracture and good alignment were treated with PFN. Patients with sing index <3 & with traction x-ray showing irreducible and unstable fracture and not showing good alignment were treated with cemented hemiarthroplasty. GT and /or LT were reconstructed wherever indicated. Results: Our study included 40 cases with mean age of 78 yrs. Average Harris hip score being 78.2 for PFN and 76.8 for Hemiarthroplasty. Average stay in the hospital was 10 days for PFN & 13 days for hemiarthroplasty patients. 3 cases died due to medical complications earliest being 3 months post operative period and late being 18 months (2 hemiarthroplasty and 1 PFN). There were 2 cases of superficial infection in hemiarthroplasty cases which were treated with oral antibiotics and 1 case of screw Back-out due to collapse in PFN case for which revision surgery with cemented hemiarthroplasty was done. Conclusions: IT fractures can be treated with either PFN or cemented Hemiarthroplasty with good results following the above mentioned criteria.

Date: 2012-11-30
Session: Trauma: Hip I
Time: 08:30 - 10:00
Room: Rashid D

Abstract no.: 32484

PROXIMAL FEMORAL NAIL ANTIROTATION (PFNA) VERSUS ANTIROTATION TROCHANTERIC NAIL (ATN): A COMPARATIVE STUDY FOR THE TREATMENT OF PERITROCHANTERIC FRACTURES IN ELDERLY PATIENTS

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Aim: The purpose of our study was to compare the proximal femoral nail anti rotation (PFNA; n = 71) with anti rotation trochanteric nail (ATN; n = 69) in the treatment of peritrochanteric fractures in elderly patients. **Patients and Methods:** The inclusion criteria were as follows: mobile and independent elderly (>70 years) patients, mental competence (a standardised mini-mental state examination score of '30–20'), patients with isolated and displaced closed peritrochanteric fractures. The fractures were identified according to the AO/ASIF classification. The fractures were reduced by closed reduction. The operation time, blood loss, fluoroscopy screening time and length of hospitalization were recorded. Patients were followed for 1 year and had a clinical and radiological review at 6 weeks, 3, 6 and 12 months. **Results:** There were no significant differences between the groups in terms of demographic data. No statistical differences in general complications, intraoperative blood loss, length of hospitalization and hip function could be found between the two groups. The average operative and fluoroscopy times longer in the ATN group (52.3 min, 26 sec.) compared with PFNA group (44.7 min., 21 sec.) respectively. Additionally, ATN has a higher rate of cut-out (5,8%) compared with PFNA (1.4%). **Conclusions:** PFNA demonstrates a lower incidence of cutout in the treatment of peritrochanteric fractures. The PFNA nail provides a shorter operation time, less blood loss, and better realignment ability and reduces the incidence of re-operation. We recommend PFNA for the treatment of peritrochanteric fractures for elderly.

Date: 2012-11-30
Session: Trauma: Hip I
Time: 08:30 - 10:00
Room: Rashid D

Abstract no.: 31375

APPLICATION OF THE MODIFIED DIMON HUGHSTON OSTEOTOMY IN THE MANAGEMENT OF UNSTABLE COMMUNUTED PERTROCHANTERIC HIP FRACTURES

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Comminuted pertrochanteric hip fractures in the elderly are a surgical challenge. Application of the modified Dimon Hughston osteotomy in such very unstable fractures would result in stable reduction with bony contact. Fracture stabilisation is achieved using a 135 degree barrel plate and a lag screw placed in the inferior part of the femur head. This aids in valgus positioning of the proximal femur to compensate for limb shortening. We report eight patients managed in this manner, who were allowed immediate weight bearing as tolerated using a walking frame. All fractures except one united at a mean of 13 weeks. This patient had a fall two weeks post operatively leading to failure of fixation and required conversion to a total hip arthroplasty. Another patient required surgical debridement for trochanteric bursitis. One patient died at nine months after the procedure from unrelated causes. Average shortening in the series was 1.75 centimeter and all patients were advised to use a walking stick to decrease the lurch in gait. The osteotomy permits early and unrestricted weight bearing with predictable fracture union. The potential complications of lack of mobilisation in the elderly patients can thus be overcome with this reproducible procedure for unstable comminuted pertrochanteric fractures when the anatomical reduction cannot be achieved.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 32833

UNIPOLAR MODULAR EXETER HEMIARTHROPLASTY REDUCES LENGTH OF STAY AND ALLOWS FASTER REHABILITATION AFTER HIP FRACTURE; A RETROSPECTIVE STUDY OF 117 PATIENTS

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Introduction: This study aims to compare the early results of the Exeter Unipolar variable-offset modular device (Exeter) with the Cemented Thompson (Thompson) hemiarthroplasty. Methods: This retrospective cohort study included patients undergoing Thompson or Exeter hemiarthroplasty between November 2010 and August 2011. Choice of implant was made according to availability of equipment and surgeon preference. Groups were compared using thirteen descriptive variables to identify discrepancies in patient selection. Results were assessed using survival, complications and length of stay. Results: 117 underwent Thompsons (n=67) or Exeter (n=56) hemiarthroplasty by 24 different surgeons. Median follow-up was 9 months (6-11 months). Length of stay was lower in the Exeter group (Median 5.72 (4.01-7.95) vs 6.99 (4.58-9.24) days p=0.048). Time to discharge from rehabilitation was also lower in the Exeter group (Median 13.6 (11.0-23.8) vs 21.7 (16.0-31.2) days p=0.0003). Three Thompson prostheses dislocated; there was one deep and one superficial wound infection. One Exeter became infected requiring revision; there were no dislocations. Prosthesis survival at 1 year was 98.1% (SE 0.019) in the Exeter group and 95% (SE 0.027) in the Thompsons group. There were no statistically significant differences with respect to Age, Mental State, Co-morbidities, Mobility, Blood tests, Nottingham Hip Fracture Score or time to surgery. Discussion: There was faster rehabilitation in the Modular Unipolar Exeter group. This could result from more accurate restoration of anatomical offset and ease of insertion compared to mono-block designs. Conclusion: The Unipolar Exeter Hemiarthroplasty reduces length of stay and improves rehabilitation after hip fracture. We recommend its use.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 32213

AUGMENTED OSTEOSYNTHESIS FOR FEMORAL HEAD PRESERVATION IN NONUNION OF FEMORAL NECK FRACTURES IN CHILDREN AND YOUNG ADULTS (OUR EXPERIENCE)

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Background: Primary delayed presentation of intracapsular fractures of neck of femur in children and young adults below 40 years of age is seen more often in some parts of the world. Various procedures are described to achieve union of femoral neck fractures. Preservation of the natural hip function is always desirable. Objective: To achieve union of the fractures of neck of femur in children and young adults presenting primarily or secondarily as non-unions. Patients and method: Eleven patients in the age group of 9 to 40 years (five children below 15 years of age) presenting with femoral neck non union were included in the study. All except one presented after 3 months to 1 year of injury without treatment. One adult patient presented as non union after a primary dynamic hip screw fixation for femoral neck fracture. All patients were treated by augmented osteosynthesis with or without cancellous bone grafting. The follow-up was between 24 to 30 months (minimum two years). Results: Union was achieved in all. One child had avascular necrosis. Children had complete range of motion, while in adults flexion was terminally restricted. Harris hip score will be presented. All the hips were painless. Limb length discrepancy of average 1.5 cms was noted in adults but not in children. Conclusion: Union can be achieved in non-union of femoral neck fractures by augmented osteosynthesis, with or without bone grafting procedures, which can be chosen as per the age of the patient and the characteristics of the non union.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 30847

CLOSING LATERAL WEDGE VALGUS OSTEOTOMY WITH DYNAMIC HIP SCREW FOR THE TREATMENT OF VARUS NONUNION OF PERTROCHANTERIC FRACTURE: CAN RESTORATION OF BIOMECHANICS AND STABILIZATION ALONE HEAL?

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INTRODUCTION: Nonunion of pertrochanteric fracture is rare and its occurrence especially without prior surgical intervention has been hardly ever reported. Pertrochanteric fracture non union collapses into varus by virtue of deforming action of muscles and thus deranging the biomechanics of the hip and indirectly preventing fracture union further. Hence it is very important to re-orient the abductor lever arm to biomechanically advantageous normal configuration favoring fracture healing. In general, principles of treatment of nonunion like open reduction of the fracture with freshening of fracture fragments, stabilization and bone grafting are very difficult to the surgeon and the patient.**METHOD:**We herewith describe for the first time in literature a prospective nonrandomized study of closing lateral wedge valgus intertrochanteric osteotomy in addition to dynamic hip screw osteosynthesis in the successful management of seven patients with varus trochanteric non_union. Average operating time was 63 ± 13 min (range 39-93 min) and blood loss was 212 ± 32 ml (range 156— 320 ml). Average pre-operative coxa vara of $94^\circ \pm 7^\circ$ (range 85° - 104°) had improved to a femoral neck shaft angle of $139^\circ \pm 4^\circ$ (range 134° - 145°) on postoperative radiographs.**RESULTS:** All fractures and osteotomies had healed uneventfully at the last follow-up with good functional outcome. Harris Hip score had improved from 34 ± 6 (range 22-47) to 89 ± 4 (range 83-95) at an average of 11 months (range 7-13 months) follow up. Valgus osteotomy converts shear forces across the fracture site into compression forces thus achieving union.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 32061

OUTCOMES OF TOTAL HIP ARTHROPLASTY FOR HIP FRACTURE: A COMPARISON TO ELECTIVE HIP ARTHROPLASTY

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Introduction: Total Hip Arthroplasty (THA) is being increasingly used in preference to Hemi-arthroplasty in well-functioning patients sustaining intra-capsular hip fracture, highlighted in recent NICE guidelines. There is no currently published data comparing outcomes with elective primary THA. Method: We identified 123 patients locally who had undergone THA for intra-capsular fractures prior to 2009. Electronic records were interrogated for each patient and complications noted. Minimum follow-up was 1 year. All patients who died since surgery were recorded. Patients treated between 2007-09 were assessed using an Oxford Hip Score, EQ-5D and visual analogue score. Outcome scores were compared to a control group of patients who underwent elective primary THA. We also considered implant and bearing choice. Results: There have been 32 deaths, 8 deaths occurring within 1 year of surgery. 4 patients had dislocation (3.2%), 3 had venous thromboembolism, 1 sciatic nerve palsy. 5 patients (4%) have undergone revision surgery (2 for infection, 2 for mechanical instability, 1 peri-prosthetic fracture). Mean Oxford Hip Score was 23.6, versus 18.2 for the control group. Students t-test demonstrated a significant difference in means ($P < 0.01$). There was no significant difference in mean scores for the EQ-5D questionnaire or visual analogue score. Discussion: Patients undergoing total hip arthroplasty for fracture have a small, but significantly poorer level of function relating specifically to the hip, but not in perception of general wellbeing. Complications resulting from the procedure were as expected for elective arthroplasty, though the mortality rate is likely to reflect a greater degree of pre-fracture morbidity.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 32359

COMPARISON OF HEMIARTHROPLASTY AND INTERNAL FIXATION FOR THE TREATMENT OF UNSTABLE INTERTROCHANTERIC FRACTURES OF THE FEMUR IN ELDERLY PATIENTS

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The results obtained in elderly patients with intertrochanteric fractures of the femur that were treated either by hemiarthroplasty or internal fixation by Proximal Femoral Nail Antirotation (PFNA) are being discussed. 41 patients were treated with calcar replacement type hemiarthroplasty and 46 were treated with PFNA. The mean follow-up was 20 months. The results were compared statistically for infections, operation time, bleeding, length of hospital stay, revisions, cost, Harris hip scores, SF36 questionnaire and mortality rate. The PFNA group had less blood loss, shorter operation time and less cost. The other criteria were similar. We conclude that internal fixation should be the choice of treatment in these patients, rather than hemiarthroplasty.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 32673

INTRAMEDULLARY FIXATION FOR UNSTABLE TROCHANTERIC FRACTURES; 2 SCREWS OR HELICAL BLADE – A PROSPECTIVE TRIAL

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This single center prospective trial attempted to compare the radiological, functional outcome and complications with proximal femur nail anti-rotation (PFNA-III generation, n = 52 patients) and proximal femur nail (PFN- II generation, n = 50 patients) in unstable trochanteric fractures (AO 31.A2 and A3). The mean age was 66 years (55 – 96 years) and the mean T score was – 2.2 {-1.6 – (-2.8)}. The mean follow up was 18 months and 8 patients were lost in follow up. The mean surgical time and fluoroscopy use were significantly less in PFNA group (P < 0.05). Radiological outcome {fracture reduction, implant position in the femoral head, neck shaft angle and union rates} and functional outcome measures {VAS, abductor lurch, Parker and Palmer mobility scores} were similar in two groups (P > 0.05). The overall complication rate was 14% and was similar in both groups. Varus collapse was seen in 8 patients. Cut out was seen in 4 patients (neck screw – 3 and helical blade – 1). Medial migration of the helical blade was seen in 1 patient. Revision surgery (total hip arthroplasty) was performed in 4 patients. Higher complication rates were associated with fractures with poor reduction and/or unsatisfactory positioning of neck screw/blade rather than implant design. The results of PFNA and PFN seem to be similar with respect to outcome and complications in unstable trochanteric fractures. Complications are mainly surgeon or technique related.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 32803

COMPARISON OF 1 YEAR OUTCOMES OF TOTAL HIP REPLACEMENT, HEMIARTHROPLASTY AND INTERNAL FIXATION FOR DISPLACED INTRACAPSULAR NECK OF FEMUR FRACTURES.

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Following several RCTs and meta-analyses, total hip replacement (THR) for patients suffering displaced intracapsular fractures of the neck of femur (NOF) has become more common. We reviewed the results of THR's in our institution in order to investigate whether the comparison with hemiarthroplasty or internal fixation remained as favourable as in the trials. We prospectively gathered data on all NOF patients admitted to our institution between October 2008 and October 2009. Patients aged 60-80 years old, with displaced intracapsular fractures, who were living and mobilising independently, and cognitively normal, were included. Patient survival, implant revisions, other complications, and Oxford and Harris hip scores were recorded at a minimum of 1 year follow up. 14 THR's, 19 hemiarthroplasties and 5 internal fixations were performed. 4 patients died within 1 year of surgery. The Harris and Oxford hip scores were significantly better in the THR group. There were 2 revisions (1 hemiarthroplasty and 1 internal fixation). There was 1 dislocation in the THR group, which did not require revision. 6 patients in the non-THR groups continued to suffer pain at 1 year but have not yet undergone revision surgery (4 hemiarthroplasties and 2 internal fixations). We have found that in our centre's routine practice, THR performed favourably as a procedure when compared against hemiarthroplasty and internal fixation, for this cohort of patients. We recommend that THR is at least considered for all such patients with a displaced intracapsular NOF fracture.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 32650

TRAUMATIC DISLOCATIONS OF HIP: LONG TERMS FOLLOW UP STUDY

Uttam Chand SAINI, Sushil RANGDAL, Nitesh GAHLOT, Aswani SONI,
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PGIMER, Chandigarh, Chandigarh (INDIA)

Incidence of dislocation and fracture dislocation hip are increasing day by day. These injuries are most commonly caused by high speed motor vehicle crashes with approximately 2/3 of all fracture-dislocations occurring in young adults . Most studies in literature describing pure dislocations of hip are focused on the mechanism of injury, epidemiology, associated injuries, evaluation, treatment and functional outcomes are based on short term results. We here present 46 cases of pure hip dislocation with mean follow up 12.2 years and their course over long run. We used Short Form-36 (SF-36) Performa to assess the present quality of life for all patients.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 32503

SURVIVABILITY OF A CANNULATED HIP PROSTHESIS IN ELDERLY PATIENTS WITH A COMPLEX PROXIMAL FEMORAL FRACTURE

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Introduction: Complex proximal femoral fractures secondary to meta-static destruction and peri-prosthetic fractures in the elderly patient is a major management challenge. Our objective is to review the results of the Cannulok hip system in the management of these complex conditions. Methods: There were 17 Cannulok® hip arthroplasties performed between 2007 and 2011. This group of patients consisted of 7 males and 10 females, with a mean age of 80.3 years (+/-14SD). 10 patients have a Vancouver grade B2 peri-prosthetic fracture, 4 patients have an intra-capsular fracture of the neck of femur associated with severe osteoarthritis of the hip and 3 patients have a metastatic bone disease of the proximal femur. Results: Six patients (35%) died from an unrelated cause and none of them required further surgery. The mean survival of the prosthesis in this group was 226 days (+/- 359SD). 11 patients (65%) still had a functional weight-bearing hip at the last review and were discharged back to their home environment. The mean survival of the prosthesis in this group was 716 days (+/- 482SD). There were 6 complications; 2 infections, 1 heart failure and 3 hip dislocations. Discussion: In our study 82% did not require further surgery with this prosthesis. We believe the principle treatment in these patients involved using a prosthesis that will endure the lifespan of the patient. We found the Cannulok® hip arthroplasty system to be a valid option in the management of these conditions and to have a low chance of further surgery.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 33081

TREATMENT OF HIP FRACTURES USING A MINIMAL INVASIVE APPROACH FOR BIPOLAR ARTHROPLASTY- A RANDOMIZED TRIAL

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Introduction: It is known that early postoperative mobilization after hip fractures directly influences morbidity and mortality. We conducted a randomized trial comparing a standard approach with a minimal invasive approach. The main outcome parameter was mobility measured by the 4-item Barthel-Score. **Patients:** Randomization of 60 consecutive patients was performed. Of the 60 patients, 53 were female (88%), the mean age was 84.3 years. There was no significant difference in the study arms regarding sex, age and BMI. **Methods:** Study design was prospective, blinding was not performed. Three surgeons performed the operations after at least 30 minimally invasive procedures had been performed. Implants used were the cemented ABGII stem (STRYKER) with a standard bipolar head in all cases. The four-item Barthel-index (focused on lower extremity function) was determined pre-trauma and assessed at day 1/5/16 and 40 after surgery. Assessment was performed by an independent physiotherapist. **Results:** Mean procedure time was 64.8mins (40-94, SD 17.1) for the WJA and mean 73.6 minutes (min. 48, max. 90 min, SD 14.4) for the DAA group ($p=0.18$). The results of the Barthel-Index showed a higher score at day 5, 16&40 for the DAA approach ($p=0,009/p=0,05/p=0,013$). Evaluation of the postoperative pain showed a significant difference with a lower pain-score for the DAA at day 16&40. **Discussion:** We could show in our study that the use of this approach positively influences the postoperative mobilization in a geriatric population.

Date: 2012-11-30
Session: Trauma: Hip II
Time: 10:30 - 12:00
Room: Rashid D

Abstract no.: 32614

MIDTERM MORTALITY AND MORBIDITY OF FRACTURE NECK OF FEMUR SRI LANKAN PATIENTS – WITH A COMPARISON TO SOUTH ASIAN AND REGIONAL DATA

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Introduction: Fracture neck of femur is a common orthopedic presentation in Sri Lanka. Majority of them are elderly with preexisting age related disabilities and co-morbid factors. Cultural and economic factors play a role in long term outcome. Objective: To identify the midterm mortality, morbidity and their quality of life (QOL) after fracture fixation with comparing to South Asian and regional figures. Methodology: Prospective cohort study, on operated fracture neck of femur patients (N=210). Pathological fractures were excluded. Reassessment was done at 01st yr or 02nd year follow up. Functional status of the hip was assessed with Harris Hip Score. The EuroQOL was used to assess quality of life. Results: In Sri Lankan patients survival was 91.61% at the end of 1st yr and 2nd yr 84.52%. In 94% cases pain is not interfering with day to day life. Results were analyzed in relation to the walking distance, accessibility of public transport, and comfort on sitting, dependency, accessibility for sanitary facilities. Mortality, morbidity and functional outcome will be compared with regional countries. Conclusion: Global mortality in fracture neck femur patients is 15%- 20% within 01 yr. Low mortality rates in Asia when compare to Europe, may be due to younger age of presentation, less comorbid factors or may be due to poor health recording. Survivors show improvement in ambulatory status and QOL scores at 1-year to 2 year post-fracture. Optimizing co morbid factors and aggressive rehabilitation will improve the patient independence in one-year.

Date: 2012-11-30

Session: Trauma: Hip Acetabular

Time: 14:00 - 15:30

Room: Rashid D

Abstract no.: 32724

WHICH IS BETTER; THE MODIFIED STOPPA OR THE ILIO-INGUINAL APPROACH?

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Classic acetabular surgeons usually utilize the Ilioinguinal approach in anterior exposure of acetabular fractures. Nowadays, the Modified Stoppa approach is continuously replacing the Ilioinguinal approach. The aim of this work is to compare the clinical and radiological results of patients managed by the former approach to that of patients managed by the later one. The study was done at Elhadarah Trauma and Orthopaedic University Hospital. It included two groups of patients. The first group 25 patients who were managed by an ilioinguinal approach with or without an additional posterior approach. The second group included 20 patients managed by the Modified Stoppa approach. The operative time, rate of approach related complications, the need of an additional approach and the accuracy of reduction was recorded for each patient. The two groups were compared to each other. Based on the results, the authors concluded that the modified Stoppa approach is better than the Ilioinguinal approach in the management of acetabular fractures.

Date: 2012-11-30

Session: Trauma: Hip Acetabular

Time: 14:00 - 15:30

Room: Rashid D

Abstract no.: 32738

**OSTEOPHYTE COLLAR DEVELOPMENT AT THE FEMORAL HEAD /
NECK JUNCTION FOLLOWING ACETABULAR FRACTURES**

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The aim of acetabular fracture fixation is to restore joint congruity with restoration of the articular surface. Poor outcomes are seen where this has not been achieved. Letournel reported a collarette osteophyte seen postoperatively in a proportion of patients, which he identified as an early precursor to the development of osteoarthritis. In this retrospective study from all patients treated at this supra-regional unit, the triangular index was measured in 51 patients displaying this lesion and correlated with clinical findings, including Oxford Hip Score, and the presence of osteoarthritis. Other parameters were also recorded including length of follow up, fracture classification, and joint congruency. Results showed positive relationships between osteophyte size and length of follow up ($P < 0.05$), osteophyte size and the development of osteoarthritis ($P < 0.05$), and a positive relationship between groin pain and postoperative congruency ($P < 0.05$). These findings suggest that the presence of an osteophyte collar is a poor long-term prognostic marker and that its size increases over time with an increased chance of the development of osteoarthritis.

Date: 2012-11-30
Session: Trauma: Hip Acetabular
Time: 14:00 - 15:30
Room: Rashid D

Abstract no.: 32678

PROGNOSIS OF UNSATISFACTORY OUTCOMES AFTER OSTEOSYNTHESIS OF ACETABULAR FRACTURES

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Aim: To determine the reasons for early unsatisfactory clinical outcomes during acetabular fractures after osteosynthesis with good or excellent reposition of fracture fragments, which is evaluated by post operative x rays. **Materials & Methods:** Data of 25 patients who underwent osteosynthesis without pre operative avascular necrosis of the femoral head was analyzed. The median age was 38 years (18-56). Time interval of injury varied from 2 weeks to 3 months. Injury to the weight bearing segments noticed in 14 patients and in 12 patients comminuted fractures of the acetabulum was observed. Anatomical reposition of fracture fragments achieved in 12 patients by free auto bone grafting. Post-operatively full restoration of acetabular anatomy was confirmed by radiologically. **Results:** THR was performed for avascular necrosis in 5 patients within the period of 1 year after surgery. 1 patient has radiological signs of coxarthrosis without any functional limitations. Above mentioned 6 patients had comminuted fractures of the weight bearing segments and the time interval from injury to surgery was >3 weeks. After a year the median functional score by Harris Scale was 82. **Discussion:** Comminuted fractures in the weight bearing segments >3 weeks old will result in early degenerative - dystrophic changes of the hip joint, even when the exact reposition is provided. In young & middle age groups, initial stage of coxarthrosis occurs without any significant functional impairment. During planning, it is very important to take in account for the possibility of THR especially in patients with injury >3 weeks old.

Date: 2012-11-30
Session: Trauma: Hip Acetabular
Time: 14:00 - 15:30
Room: Rashid D

Abstract no.: 32502

RISK FACTORS OF VENOUS THROMBOEMBOLISM IN ASIAN PATIENTS WITH PELVIC-ACETABULAR TRAUMA

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Purpose: To determine risk factors of venous thromboembolism in Asian patients undergoing surgery for pelvic-acetabular fractures. **Methods:** 48 men and 8 women aged 17 to 61 years who underwent open reduction and internal fixation for pelvic-acetabular fractures were evaluated for VTE in postoperative period. Pulmonary angiography and indirect tomographic venography were used in hospital, whereas colour Doppler ultrasonography was used in an outpatient setting until postoperative week 6. Patients with evidence of VTE were treated according to American College of Chest Physician guidelines. Correlations between VTE and putative variable were assessed, and risk factors determined. **Results:** 16 patients developed VTE. Six patients with proximal DVT had associated pulmonary embolism). There were 12 cases of proximal deep vein thrombosis (DVT), 2 of distal DVT and 10 cases of PE. The rate of VTE was significantly higher in patients who had predominantly posterior injury (as opposed to anterior injury) [13/27 vs. 3/29, $p=0.0046$], or were operated in the lateral position (as opposed to supine position) [13/30 vs 3/26], or via Kocher-Langenbeck or combined approach (as opposed to others) [13/30 vs. 3/26, $p=0.0362$]. Patients were more likely to develop VTE when they had predominantly posterior injuries (7.8 fold) or were operated on in a lateral position (3 fold) or via the Kocher Langenbeck approach (2 fold). The type of injury was the most important factor in determining the risk of VTE ($p=0.01$). **Conclusion:** Pelvic-acetabular trauma was a significant risk factor for VTE, even in Asians. Patients having posterior injuries, operated in lateral or via Kocher-Langenbeck approach had significantly higher risk of VTE.

Date: 2012-11-30

Session: Trauma: Hip Acetabular

Time: 14:00 - 15:30

Room: Rashid D

Abstract no.: 31891

**DETERMINANTS OF OUTCOME AFTER ACETABULAR FRACTURE
FIXATION: STUDY OF 102 CASES WITH MINIMUM 2 YEAR FOLLOWUP.**

Lokesh VEERAPPA

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Introduction: The results of operative management of acetabular fractures have been suboptimal. The determinants of outcome are still being assessed. Aims: Analysis of determinants of outcome of acetabular fracture fixation with minimum of 2 years follow-up. Methods: 102 patients with acetabular fractures were operated between June2006 and June2009. The patients were followed for an average of 3.6years (2-5years). Outcome analysis was done with Merle De' Aubigne score. The parameters assessed as the determinants of outcome were the initial displacement, adequacy of reduction, fracture pattern, comminution (35patients), marginal impaction (38patients), femoral head injury (6patients) and complications like avascular necrosis (2patients), infection (2patients) and sciatic nerve injury (5patients). Results: Fracture reduction of 0-2mm was achieved in 84 patients, 2-5mm of reduction in 9patients and malreduction of > 5mm in 7 patients. 80 patients had excellent outcome, 13 good, 5 fair and 4 poor outcome. All patients with good reduction had excellent outcome except 2 AVN and 2 infection (poor outcome). 7 patients with malreduction had fair outcome. with femoral head injury affecting outcome adversely. Marginal impaction (bone grafted from greater trochanter) had no impact on outcome. Comminution affected outcome among patients with malreduction (4 patients fair outcome). Fracture pattern and sciatic nerve injury had no impact on outcome. Conclusion: Acetabular fracture surgery can yield good to excellent results. Adequacy of fracture reduction is a major determinant of outcome. AVN and infection give poor outcome. Marginal impaction, fracture pattern and sciatic nerve injury have no effect on outcome. Key words: surgical management, adequate reduction, clinical outcome.

Date: 2012-11-30
Session: Trauma: Hip Acetabular
Time: 14:00 - 15:30
Room: Rashid D

Abstract no.: 31719

A NEW MINI-OPEN APPROACH FOR REDUCTION OF ANTERIORLY DISPLACED ACETABULAR FRACTURES

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Minimal invasive fixation has been reported as an alternative option for treatment of acetabular fractures to avoid blood loss and complications of extensive wounds. Closed reduction and percutaneous lag screw fixation can be done in minimally displaced acetabular fractures. Open reduction is indicated, if there is wide displacement. In this study, we report the use of a mini-open anterior approach to manipulate and reduce anteriorly displaced transverse acetabular fractures with percutaneous lag screw fixation in 6 patients. An oblique mini-incision (3-4 cm) was made above and medial to the mid-inguinal point, lateral to the lateral border of rectus abdominis muscle. Pointing to the fracture using fluoroscopic guidance served precise localization of incision. The external abdominal oblique aponeurosis was incised along its fibers, and then the arched fibers of internal abdominal oblique were displaced medially above the inguinal ligament to expose the fascia transversalis, which was incised. Care was taken to avoid injury of inferior epigastric vessels, ilioinguinal nerve, and spermatic cord. The external iliac vessels should be palpated and protected laterally. A long blunt bone impactor was introduced through this small incision to manipulate and reduce the fracture under fluoroscopic control. The bone impactor can manipulate and push the anterior column, the quadrilateral plate, and the medial surface of the posterior column to achieve fracture reduction. Care was taken to avoid injury of the obturator nerve and vessels. Fluoroscopic guided percutaneous lag screw fixation was done. Excellent reduction was achieved in all patients. We did not report any wound complications.

Date: 2012-11-30
Session: Trauma: Hip Acetabular
Time: 14:00 - 15:30
Room: Rashid D

Abstract no.: 30801

ACETABULAR FRACTURE RESULTS IN SIGNIFICANT FEMORAL HEAD INJURY: MRI FINDINGS AT THE TIME OF INJURY

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Introduction: Acetabular fractures occur as a result of high energy trauma. The femoral head acts to transfer the significant force to the acetabulum that results in fracture. The aim of this study was to assess femoral head injury at the time of fracture using MRI and CT imaging modalities. Methods: 15 patients with acetabular fractures who were treated at a tertiary referral centre for pelvic and acetabular trauma surgery were studied using a 1.5T MR imager. Fractures were classified according to the Le Tournel classification. The MR images were reviewed independently by two consultant radiologists. Bone marrow oedema, microfractures and osteochondral disease was graded according to quantity and location. Results: Significant bone marrow oedema in the femoral head (grade 2/3) was found in 60% (9/15) of patients. The most common location was the upper outer quadrant 66% (6/9). This location most likely occurred with fractures of the posterior column and/or wall (chi square, $p < 0.05$). Osteochondral lesions were observed in 25% (4/15) of patients. Cortical depression fractures of the femoral head were observed in 33% (5/15) of patients. Excellent interobserver reliability was observed for bone marrow oedema grading and description of location (kappa value 0.71 and 0.86 respectively). Conclusion: This is the first study that we are aware of to demonstrate that significant femoral head oedema occurs at the time of injury in acetabular fractures. This femoral head injury could potentially result in significant hip pain, which may account for some of the postoperative pain experienced by this patient group.

Date: 2012-11-30
Session: Trauma: Hip Acetabular
Time: 14:00 - 15:30
Room: Rashid D

Abstract no.: 32345

FUNCTIONAL OUTCOME OF SURGICAL FIXATION OF ACETABULAR FRACTURES – A PROSPECTIVE STUDY OF 31 PATIENTS WITH 3 YEARS FOLLOW UP

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Introduction: Acetabulum fractures are complex fractures, and achieving optimum results requires experience. Difficulty in understanding the fracture pattern, extensive surgical exposure, difficult reduction and high complication rates make this a challenging topic. The present paper is a prospective study of displaced acetabular fractures treated at our institute. Material and methods: They were 31 patients who met the inclusion criteria selected for the purpose. They were between the physiological age of 15 and 63 years (Mean 40.1years), and included 29 males and 2 females. Out of 18 simple fractures commonest fractures were posterior wall (8) and out of 13 complex fractures 'T' type (7) were in majority. Open reduction and internal fixation was done using Kocher-Langenbeck (20) or Ilio-inguinal(4) or combined(7) approach depending upon fracture pattern. Results: Immediate post operative reduction was assessed using Joel Matta's criteria. Our study had 21 anatomical, 9 satisfactory and 1 unsatisfactory reductions. Merle D'Aubigne and Postel scoring system was employed to assess the outcome with respect to pain, ambulation and range of movement. Accordingly 16 patients had excellent result, 4 very good, 5 good, 2 fair and 4 poor result at the end of 3 years of follow up. Conclusion: Our results show that ORIF of acetabular fractures can be carried out safely and effectively by an experienced surgical team with satisfactory outcome. Majority of fractures can be operated using posterior approach and patients with unsatisfactory post operative results usually had poor functional outcome.

Date: 2012-11-30
Session: Trauma: Hip Acetabular
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Room: Rashid D

Abstract no.: 32142

BUTTRESS SCREW FIXATION OF THE QUADRILATERAL PLATE IN ACETABULAR FRACTURES

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Introduction: Quadrilateral plate fractures constitute one of the most challenging components of acetabular fractures. Among the fixation methods of these fractures is the buttress screws technique which could be employed for reduction and fixation of these challenging fractures. **METHODS:** 24 cases of acetabular fractures; associated types, have been treated with open reduction and internal fixation through ilioinguinal or combined ilioinguinal and Kocher Langenbeck approaches. The fixation of the displaced quadrilateral plate fracture component has been achieved by one or more buttress screws fixation. The screws were used through the reconstruction plate at the level of pelvic brim going out through the plate hole rubbing against the bone then on the inner (pelvic surface) of the quadrilateral plate. The 24 patients included 14 males, 10 females. All injuries were high energy injuries. The mean age was 35 years. The mean follow up period was 12 months. **Results:** Anatomic reduction of the quadrilateral plate component of the fractures has been achieved in most patients. Clinical and radiological union occurred in all patients. Modified Merle D'Aubigne and Postel score was excellent in 5 cases, very good in 16 cases, good in 3 cases. No screw failure found on follow up. No major complication related to this technique occurred in our patients. **Conclusion:** Buttress screws fixation of the quadrilateral plate fracture component in associated acetabular fractures is a useful and effective technique for reduction and fixation of these challenging fractures.

Date: 2012-11-30
Session: Trauma: Hip Acetabular
Time: 14:00 - 15:30
Room: Rashid D

Abstract no.: 31231

COMBINED FIXATION AND ACUTE TOTAL HIP REPLACEMENT FOR ELDERLY PATIENTS WITH ACETABULAR FRACTURES

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Background: Acetabular fractures in elderly are often associated with significant joint impactions that are impossible to be reconstructed anatomically and securely. Delayed total hip replacement has inferior results compared with primary reconstruction. Patients and methods: Prospective follow up and review of consecutive group of patients with complex acetabular fractures treated with internal fixation and total hip replacement in the same setting. All patients were treated with same surgeon at level one trauma center. Results: Eighteen consecutive elderly patients with acetabular fractures were treated by primary fixation and total hip replacement over period of eight years (2003 - 2011). The average age was 73 years old. All patients had significant joint surfaces impactions on acetabular and /or femoral side in addition to acetabular wall, column and / or femoral head /neck fractures. The average surgery time was 304 minutes, average estimated blood loss was 1046 ml. The average follow up was 29 month. There were two superficial infections cleared with wound care and oral antibiotics. One patient had post operative dislocation that was successfully treated by closed reduction. Two patients sustained new injuries (one year and seven years after original surgery) resulting in periprosthetic fractures and need for revision surgery with good final outcome. Conclusion: Acute fractures fixation and total hip replacement for elderly patients with complex acetabular fractures can be performed in a single setting with good results. Procedures are complex, acetabular fractures osteosynthesis and total joint replacement skills are necessary, as well as good anesthesia and medical team.

Date: 2012-11-30

Session: Trauma: Hip Acetabular

Time: 14:00 - 15:30

Room: Rashid D

Abstract no.: 32223

COMMINUTED QUADRILATERAL PLATE FRACTURE FIXATION THROUGH THE ILIOFEMORAL APPROACH

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Comminuted quadrilateral plate fracture with medial displacement is difficult to treat because of minimal bone stock, proximity to the hip joint, and difficulty in obtaining a stable fixation. Medial buttress plate fixation, in an infrapectineal fashion, is a well-described technique to address such fractures. An additional spring plate is placed underneath the infrapectineal plate to hold the comminuted fracture fragments. Conventionally, these spring plates are fixed to the ilium superiorly while the other end buttresses the quadrilateral plate when placed underneath the infrapectineal plate. The standard ilioinguinal approach and modified stoppa approach have been described for fixing the quadrilateral plate. Both the approaches have some limitations in addressing quadrilateral plate fracture. The ilioinguinal approach requires extensive dissection and mobilization of inguinal neurovascular bundle. The modified stoppa approach does not permit visualization of the entire anterior column and the hip joint. We describe the fixation of the comminuted quadrilateral plate fracture through the iliofemoral approach combined with a medial ilioinguinal window. The technique involves fixation of a spring plate (Allis T-plate) at right angle to the infrapectineal buttress plate (90-90 plate construct). The vertical limb of the T-plate is fixed to the iliopectineal eminence whereas the horizontal limb buttresses the quadrilateral plate fragments which are unsupported by the infrapectineal plate. This technique addresses fractures of both the iliopectineal eminence and the quadrilateral plate. The iliofemoral approach permits direct visualization of the entire anterior column and the hip joint without the necessity to dissect the ilioinguinal neurovascular structures.

Date: 2012-11-30

Session: Trauma: Distal Femur Floating Knee & Proximal Tibia

Time: 16:30 - 18:00

Room: Rashid D

Abstract no.: 32481

EXPERIENCE WITH LOCKED PLATING OF IMPLANT-STABLE SUPRACONDYLAR PERI-PROSTHETIC FEMORAL FRACTURES: IS THERE A ROLE OF BIOLOGICAL FIXATION? RESULTS IN 21 CASES

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Introduction: Management of supracondylar peri-prosthetic femoral fractures can be tricky as osteoporosis, comminution and bone loss compromise stability of conventional implant constructs. These do not permit early mobility, and open reduction usually necessitates additional bone grafting to prevent delayed union. The Synthes™ anatomic distal femoral locking plate allows rigid fixation. Biological fixation using this implant further prevents soft tissue stripping, and minimizes morbidity. Methods: Twenty-one patients with implant-stable comminuted peri-prosthetic supracondylar fractures were operated over a 4-year period (Oct 2006 – Sep 2010). All were fixed (some using the biological fixation method) with the Synthes™ distal femoral locking plate. All ORIF (open-reduced internally fixed) cases were primarily bone grafted. Physiotherapy was supervised with hinged knee braces and toe-touch weight bearing walking with support till radiological union. Clinico-radiological follow-up (average, 30 months) was done at 6 weekly intervals till 6 months, and then 3 monthly. Pain and function were assessed using the KSS scoring system. Results: Average time to union was 4.5 months (range, 3 to 7.5 months). At final follow-up, all (but one patient) were walking unsupported, with minimal or no pain, and an average knee range of motion (ROM) of 90° (range, 55 to 100°). No patient treated by biological method needed secondary grafting. Discussion: Distal femoral locked plating of comminuted peri-prosthetic supracondylar fractures permits stable fixation and early mobilization. Biological technique in a properly selected subset of patients may reduce time to union and obviate need for bone grafting.

Date: 2012-11-30

Session: Trauma: Distal Femur Floating Knee & Proximal Tibia

Time: 16:30 - 18:00

Room: Rashid D

Abstract no.: 30807

BALLOON OSTEOPLASTY - A NEW TECHNIQUE TO STABILIZE DEPRESSION FRACTURES OF THE TIBIAL PLATEAU: A CADAVER STUDY AND FIRST CLINICAL APPLICATION

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Fractures of the tibial plateau are among the most sophisticated injuries of the knee joint and lead to advanced gonarthrosis if the rearrangement of the fragments and the thereby the joint congruency is not restored. Many different reduction techniques have been described mostly focusing on open surgical procedures and manual reduction of the depressed fragments. In this context we would like to introduce a novel minimal invasive technique which may be applied under arthroscopic supervision. Since the triumphal procession of kyphoplasty in spine fractures showed new successful ways of pain reduction and anatomical correction, we adapted the inflatable instruments and used the balloon technique to reduce depressed fragments of lateral plateau impression fractures. We also adapted the so called "egg shell" technique for this kind of fractures to prevent cement leakage into crack fissures and inhibit possible cement leakage into the joint gap before another cement injection is used to anchor the fragment into its trabecular surrounding. The study was setup as a cadaver trial and the first clinical application was successful.

Date: 2012-11-30

Session: Trauma: Distal Femur Floating Knee & Proximal Tibia

Time: 16:30 - 18:00

Room: Rashid D

Abstract no.: 31018

FLOATING KNEE INJURIES REVIEW OF RESULTS IN 88 CASES.

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Floating Knee Injuries Review in 88 cases. Introduction; Floating Knee Injuries are a result of high energy trauma & constitute 20% of total fractures & therefore require to be anatomically reduced & rigidly fixed .Aim; To achieve early union & function & to treat & prevent sequelae & complications. Material & methods; 88 Communitied fractures around the knee in the ipsilateral limbs (Floating Knee Injuries) were treated from Jan 2005 to Dec 2009.with various implants like DC & Locked plates, Cancellous Screws or Supra - condylar Nails by the same surgeon. 2 were bilat tibia. 54 males & 33 females were followed up for a min of 2 years. 75 % fractures were predominantly AO type 3 & above. 10% were compound G-A type 1a & 2b. 14 cases were bone grafted . 2 cases had vascular compromise.1 case underwent vascular graft repair. Results; Tibial Fractures healed more soundly & earlier (8-10 wks.) than femoral fractures(12-14 wks).Average Range of movements in “ floating knee “ was 90-100 degrees, very rarely did they achieve full Knee movements. Communitied femoral fractures showed shortening upto 15-20 mm. & delayed union. Varus was seen in 4 cases. 1 case had frank non union . 4 had superficial & 2 deep infections. Conclusion; Anatomical reduction & Rigid fixation (biological or Open) gives excellant results. Bone grafting if required should be complimentary. Early mobilization improves results. This treatment modality is more compliant & patient friendly. Key words; Floating knee injuries, intra-articular, communitied, ipsilateral .

Date: 2012-11-30

Session: Trauma: Distal Femur Floating Knee & Proximal Tibia

Time: 16:30 - 18:00

Room: Rashid D

Abstract no.: 33093

OSTEOSYNTHESIS OF TIBIAL PLATEAU FRACTURES ASSISTED BY ARTHROSCOPY- A RETROSPECTIVE STUDY ABOUT 40 PATIENTS

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OBJECTIVES: To analyze the role and place of arthroscopy in the treatment of tibial plateau fractures, the surgical techniques and their risks and also the limits and advantages of this type of surgical treatment. **METHODS:** We reported in a retrospective study 40 cases with a mean follow-up of 10 years. In more than 30% we reported a pedestrian injury. In three of 4 cases, the fractures were closed, and in more than 20% we notified a high energy initial polytrauma. For our study we used the international Schatzker classification. 87,5% were external fractures of the tibial plateau. For the arthroscopic approach, we selected 21 fractures of type Schatzker 1, 12 others of type 2 and two other fractures of type 3. **RESULTS:** The mean average of hospitalization was about 9 days and the mean average of duration of partial weight bearing was about 49 days. Relating to the IKSS, the global results of all types of fractures showed: Pain score of 88.725 (35-100) Functional score of 88.750 (35-100). The global long-term results are most the same **CONCLUSION:** We think that the fractures of type 1 and 2 of schatzker classification are a good indication for the surgical treatment assisted by arthroscopy in the treatment of the tibial plateau fractures. In the recent literature, most of the authors accept the arthroscopic treatment for depression less than 5mm. This technique must be done by an operator with solid experience in arthroscopy to handle with the difficulties of this kind of surgical treatment.

Date: 2012-11-30

Session: Trauma: Distal Femur Floating Knee & Proximal Tibia

Time: 16:30 - 18:00

Room: Rashid D

Abstract no.: 31328

INTERPROSTHETIC FEMORAL FRACTURES FOLLOWING IPSILATERAL HIP AND KNEE ARTHROPLASTY - MANAGEMENT AND OUTCOME

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Introduction: Interprosthetic femoral fractures following ipsilateral hip and knee arthroplasty are a rare but serious complication in clinical practice. The purpose of this study was to analyse our experience in the management of these fractures. Methods: We reviewed the clinical and radiographic records of 23 patients (15 female and 8 male, average age: 79.2) with an interprosthetic fracture after ipsilateral hip and knee joint replacement between 2000 and 2010. For classification of interprosthetic femoral fractures, the fractures were divided into three types, depending on the fracture site and the adjacency to the prostheses. All patients underwent operative stabilization, either by lateral plate fixation, by revision arthroplasty using a long-stem, or by plate fixation and hip shaft replacement. Results: 16 patients returned to their pre-injury activity level and were satisfied with their clinical outcome. In 6 patients we saw a relevant decrease of hip or knee function and severe limitations in gait and activities of daily living. One patient died related to surgery. Successful fracture healing within six months was achieved in 19 of 22 patients (86%). Failures of reduction or fixation occurred in four of 22 patients (18%). Re-operation (due to non-union) was necessary in one patient. Conclusion: We had a satisfactory outcome following individualized treatment of interprosthetic femoral fractures following ipsilateral hip and knee joint replacement. Regarding the complexity and challenges in many of these cases, interprosthetic fractures require an adequate analysis of the fracture aetiology and a suitable transfer into the best possible treatment concept.

Date: 2012-11-30

Session: Trauma: Distal Femur Floating Knee & Proximal Tibia

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Room: Rashid D

Abstract no.: 32597

A COMPARATIVE STUDY BETWEEN ILIZAROV FIXATION VERSUS OPEN REDUCTION AND INTERNAL FIXATION FOR COMPLEX PLATEAU FRACTURES

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Bicondylar tibial plateau fractures can be difficult to treat due to the extent of articular cartilage, metaphyseal bone, and soft tissue injury. The purpose of this study was to compare the outcomes of open reduction and plating vs ilizarov fixation of 40 cases Schatzker V/VI, and divided in two groups each 20 cases. When compared plating was associated with a decreased time to union (5.9 vs 6.4 months), decreased incidence of articular malunion (7% vs 10%), decreased knee stiffness (4% vs 5%), and decreased overall complications (26% vs 28%). Secondary osteoarthritis had developed but was well tolerated in most (64% of the patients). Patients with a malalignment of more than 5 degrees developed a moderate to severe grade of osteoarthritis statistically significant more often (27% of the patients) compared to patients with an anatomic knee axis (9.2%; P = 0.02). Mean final knee flexion was 85°, which is compatible with walking. Functional results showed a mean Neer score of 88.6 points (range, 56-100 points) for both groups. All patients successfully returned to their previous occupations. Based on these results, no clinical recommendation can be made as to which procedure is better and safer for the patient.

Date: 2012-11-30

Session: Trauma: Distal Femur Floating Knee & Proximal Tibia

Time: 16:30 - 18:00

Room: Rashid D

Abstract no.: 31553

SURGICAL ASPECTS OF POSTERIOR AREA OF PROXIMAL TIBIA FRACTURES TREATMENT

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On the basis of our experience of surgery of 247 patients with proximal tibia fractures it is possible to differentiate the following variants of fractures of posterior aspect of tibial condyles supposing different approaches, variants of osteosynthesis and plastic of bone defects. 1. Anterior-lateral approach with abduction of split anterior part of lateral condyle and conventional osteosynthesis with buttress plate is mostly approved for the fractures of B 3.1 (according to AO classification). Though the fixation of posterior aspect often demands additional applying of wires and different variants of bone defect grafting providing additional stabilization. 2. Two variants of surgical approach are possible depending on degree of displacement in type B 2.2 fractures. Both posterior-lateral approach with peroneal nerve release and lateral approach along the anterior margin of lateral collateral ligament are possible. The variants of osteosynthesis are possible either with buttress plates, modeled LCP calcaneal plate, conventional wires and screws or our original method of fixation with tensioned-locked wires. 3. In complete intra-articular C3.3 type fractures fixation of the posterior part of medial condyle is available by screws from posterior-medial approach along the posterior border of tibia with partial resection or displacement of pes anserinus. Quite often the stabilization of medial condyle demands additional applying of reconstruction plate. When both condyles are broken, stabilization of internal aspect is achieved by screws which are locked in the plate inserted from the lateral side.

Date: 2012-11-30

Session: Trauma: Distal Femur Floating Knee & Proximal Tibia

Time: 16:30 - 18:00

Room: Rashid D

Abstract no.: 32589

FUNCTIONAL OUTCOMES OF SEVERE BICONDYLAR TIBIAL PLATEAU FRACTURES TREATED WITH DUAL INCISIONS

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Background: Bicondylar tibial plateau fractures are complex injuries, historically associated with high complication rates. This retrospective study was performed to evaluate the results and functional outcomes of lateral locking plate and medial antiglide plate stabilization, through anterolateral and posteromedial surgical approaches, of comminuted bicondylar tibial plateau fractures. Materials and Methods: Thirty three patients who sustained a complex tibial plateau fracture (OTA type 41C) presenting to our Level 1 trauma centre between Dec 2009 to June 2011 were stabilized with dual plating. The patients were evaluated clinically and radiographically for outcomes at a minimum follow-up of one year. Knee function as measured by the Hospital for Special Surgery score. Results: Twenty male and 9 female patients with an average age of 42 years and a minimum follow-up of one year were included. The average follow-up was 18 months. Primary bone grafting was performed in 23 cases. Twenty six patients united at 4 months after surgery with no loss of fixation. One patient had a seroma which healed subsequently while another had deep wound infection. Nineteen (65%) patients had a satisfactory articular reduction (≤ 2 -mm step or gap), 25 patients (86%) had satisfactory coronal plane alignment, 22 (75%) patients demonstrated satisfactory sagittal plane alignment, and 25 (86%) patients demonstrated satisfactory tibial plateau width (0 to 5 mm). Average range of motion was 100 degree. Conclusion: A supine antero lateral and posteromedial approach provides a good clinical solution for these complex injuries with satisfactory sagittal and coronal plane alignment.

Date: 2012-11-30

Session: Trauma: Distal Femur Floating Knee & Proximal Tibia

Time: 16:30 - 18:00

Room: Rashid D

Abstract no.: 31472

KNEE RECOVERY AFTER TIBIAL PLATUE FRACTURES

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Loss of movement and reduced muscle strength affects recovery after intra articular fractures. Aim of this study was to assess the functional recovery in terms of muscle strength and movement of knee joint .58 treated patients, from 2000 to 2006 were included in the study. 28 patients were treated by close reduction and Illizarov fixation and 30 patients with internal fixation. Measurements of joint movements and muscle function of quadriceps and hamstrings were made by Goniometry and Dynamometer at regular interval of 3,6, 12 &24 months. Isokinetic peak torque, total work, and average power were measured and compared with uninjured side. Only 5 patients, (8.6%).could recover fully in terms of muscle strength and movements in one year. 12 patients (20%) could recover hamstring strength completely by one year. Recovery was dependent upon type of fractures . Patients of >40years of age recover much slower. Recovery was not dependent on the type of treatment given. At the end of year, 53 patients had some kind of residual stiffness and weakness .Quadriceps recovery always lags behind hamstrings. Mean extension torque at the end of one year was only74% of uninjured side compared .Only 22 patients came to follow up at 24 months and it was found that all had last 5-10degrees of residual stiffness as well as some weakness of muscle as compare to normal side. So we conclude that there is significant impairment of functional recovery after these fractures, irrespective of the type of treatment after two year.

Date: 2012-11-30

Session: Tumours: Pathology & Alternative Treatments

Time: 08:30 - 10:00

Room: Dubai A+B

Abstract no.: 32683

DELAYED RECURRENT GIANT CELL TUMOR: A DIFFERENT ENTITY & THERAPEUTIC CHALLENGE

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Abstract: Delayed recurrent Giant cell tumor of long bone behaves as a distinct entity and remains a therapeutic challenge due to altered clinic-radiographic features. **Materials & Methods:** Thirty cases of the biopsy proven recurrent giant tumors of long bones were reviewed retrospectively. Thorough clinico-radiographic evaluation included Campanacci grading and Enneking staging. Treatment included extended curettage with bone grafting, resection endoprosthesis or resection arthrodesis. Functional evaluation was done by Enneking's system. **Results:** The average age was 32.4 years (16-50); 19 were females & 11 were males. Thirteen patients had 2 previous surgeries, 14 had one and 3 patients had 3 surgeries. Average duration (delay) for last successful definitive procedure was 7 months (range 5 -12 months). Knee and the distal end of the radius were the two most common sites of involvement. 19 (63.3%) tumors were Enneking's surgical stage II and Campanacci grade III; 11 were Enneking stage III; 8 had cortical breach, 10 had cement in situ, 2 had skin involvement, 1 had neurovascular involvement. Extended curettage with bone graft was done in 22 patients, 4 had resection & endoprosthesis, 3 had resection arthrodesis and 1 had amputation. Four patients (stage III) had recurrence and one of them required amputation. 3 (10 %) patients had infection and required debridement. Functional score were better in patients with curettage with bone grafting than resection & reconstruction. **Conclusion:** Recurrent giant cell tumors are a different entity and treatment should be individualized to prevent recurrence and preserve function.

Date: 2012-11-30

Session: Tumours: Pathology & Alternative Treatments

Time: 08:30 - 10:00

Room: Dubai A+B

Abstract no.: 30870

**SECONDARY BONE LESIONS IN THE AFFECTED LIMB IN
OSTEOSARCOMA (SKIP LESIONS), ITS CLASSIFICATION AND
PROGNOSIS**

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Background: Secondary bone lesions in the affected limb (SLAL) could appear after the limb-saving operation for osteosarcoma. If limb-saving surgery with a reduced surgical margin is contributing to the appearance of SLAL and eventually make the prognosis worse we should prefer more extensive surgery. On the other hand, if SLAL is closely related to the systemic metastases SLAL should be treated mainly by chemotherapy and limb saving-operation is still preferable. Methods: The authors analyzed their patients with SLAL in order to get the optimum guidelines for the surgical treatment. One hundred and sixteen patients with osteosarcoma arising in the extremities were retrospectively reviewed. Among them 106 primary lesions were resected with a margin of more than 5cm apart from the lesion. Results: Twelve patients (10%) showed SLAL in various timing of the patients'clinical course. All SLAL were accompanied with the distant metastases. And a long survivor who had lung metastases showed SLAL appeared after lung metastasis. Conclusion: We concluded that, SLAL was equal to systemic metastases. Therefore, the surgical margin which is more than 5 cm apart from the primary lesion is not enough to prevent SLAL. Only intensive chemotherapy is suspected to be useful to treat the undetectable SLAL on initial examination.

Date: 2012-11-30

Session: Tumours: Pathology & Alternative Treatments

Time: 08:30 - 10:00

Room: Dubai A+B

Abstract no.: 32781

SQUAMOUS CELL CARCINOMA ARISING FROM CHRONIC OSTEOMYELITIS. ABOUT 9 CLINICAL CASES

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Introduction: Carcinomatous degeneration in chronic osteomyelitis has been known since the 19th century. This malignant transformation is defined by a change in the clinical, radiological, bacteriological and histological symptomatology of the chronic osteomyelitis. It is a rare and late complication, developing 20 to 40 years after a chronic bone infection. Methods: We treated nine cases of chronic osteomyelitis related squamous cell carcinoma between 1993 and 2005. The patients had an average age of 54.5 (range: 38-71) years, with a male predominance (8 men, 1 woman). We analyzed the time up to cancerization, the localization and histopathological type of the carcinoma, and the type and result of the treatment. Results: The mean time between the occurrence of the skin lesions and the diagnosis of malignant degeneration was 24.5 (range: 9 to 40) years. The carcinoma resulted from tibia osteomyelitis in 5 cases, femur osteomyelitis in 3 cases and humerus osteomyelitis in one. The pathological examination showed five cases of a well differentiated squamous cell carcinoma with bone invasion, and two cases of invasive squamous cell carcinoma. The treatment consisted of amputation in all but one patient, who refused the amputation. The eight amputee patients did not show local recurrence or metastatic dissemination over a period of five years. Conclusion: Amputation appears to be an effective treatment method in squamous carcinoma secondary to chronic osteomyelitis.

Date: 2012-11-30

Session: Tumours: Pathology & Alternative Treatments

Time: 08:30 - 10:00

Room: Dubai A+B

Abstract no.: 32612

PLASTIC SURGERY IN THE ONCOLOGY OF HAND

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E.V. Varganov, A.B. Balakhnin City clinical hospital # 5, Chelyabinsk, Russia Introduction: The most important stage of reconstructive and restorative surgeries after removal of the tumor of the hand is the closure of wound. The work is aimed at demonstrating the possibility to combine skin plasty and transosseous osteosynthesis fo treatment of the hand tumours. Methods: The material for the analysis were 298 medical records of the patients who underwent treatment between 1992 and 2012 in the center of hand surgery with tumors of the hand. All these patients carried dermepenthesis due to the presence of postoperative tissue defects. Primary skin plasty was used in 255 and the secondary one in 43. Depending on the condition of hand soft tissues, we use determin the version of plasty. Results: The analysis of short-term (less than 12 months) and long-term (up to 20 years) outcomes showed that in cases of commonly accepted techniques of skin plasty positive results were obtained in 73,6% and in the cases where transosseous osteosynthesis was used the success rate was 91,3%. The use of the combination of skin plasty and transosseous osteosynthesis provided a 1,5-fold reduction of the number of disability outcomes. Conclusion: The reduction of the treatment period for the patients with hand tumours that is achieved when primary reconstructive surgeries are performed in combination with transosseous osteosynthesis proves the efficiency of this trend in oncology and hand surgery.

Date: 2012-11-30

Session: Tumours: Pathology & Alternative Treatments

Time: 08:30 - 10:00

Room: Dubai A+B

Abstract no.: 32616

**CALCANEAL BONE CYST - A DISTINCT CLINICAL ENTITY? :
COMPARATIVE STUDY WITH SIMPLE BONE CYSTS OCCURRING IN
LONG BONES**

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Introduction: Simple bone cysts are benign fluid-filled lesions of unknown etiology, commonly seen in long bones of children. In the long bone cysts, pathologic fracture and recurrence after treatment tends to be a problem. Calcaneal bone cysts are seen in higher ages, and recurrence after treatment is rarely reported. The aim of this study was to elucidate the clinicopathologic differences seen between the two groups, and seek a key to pathogenesis and efficient treatment. Methods: 39 surgically treated cysts were evaluated. 16 were calcaneal bone cysts and 23 were long bones cysts (16 humerus and 7 femur). All calcaneal bone cysts were treated with curettage and bone substitute grafting. Clinical outcome, content of cyst fluid (n = 31), and histological features of the fibrous wall were compared. Results: 7 patients underwent reoperation due to recurrence. No recurrence was seen in the calcaneal bone cysts. Biochemical analysis of cyst fluid revealed significantly higher concentration of ALP, BAP, and ACP in the long bone cysts, whereas cholesterol concentration was significantly higher in the calcaneal bone cysts. In the HE stained specimen of the cyst wall, cholesterol clefts were a common finding for calcaneal bone cysts, whereas none were seen in long bone cysts. Conclusions: Curettage and grafting with bone substitute yielded good results for calcaneal bone cysts. The cholesterol clefts can be attributed to previous hemorrhage, and calcaneal bone cysts may be a result of local hemorrhage. Calcaneal bone cysts should be differentiated from long bone cysts, in considering pathogenesis and treatment.

Date: 2012-11-30

Session: Tumours: Pathology & Alternative Treatments

Time: 08:30 - 10:00

Room: Dubai A+B

Abstract no.: 32241

**SYNERGISTIC EFFECT OF COMBINATION TREATMENT WITH
CAFFEINE AND VALPROIC ACID IN OSTEOSARCOMA**

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Introduction: Caffeine is a xanthine analog that inhibits DNA repair and also induces apoptosis. As we had already reported, we have utilized caffeine in our chemotherapy protocol of bone and soft tissue sarcoma. And we achieved excellent clinical results. On the other hand, valproic acid has HDAC inhibitory activity and combination with chemotherapy and radiation has been reported. We performed combination treatment with caffeine and valproic acid in osteosarcoma. Methods: Three cell lines (MG63, 143B, and SaOS2) were used. Cell survival after a 72 hrs exposure to these compounds was assessed by WST-8 assay, and IC50 value was calculated. Apoptosis was assessed by Annexin V-FITC/propidium iodide assay. In vivo, 143B was transplanted to the tibia of nude mice, and treated with these drugs. Results: Both compounds caused concentration-dependent cytotoxic effect. And synergistic effect of combination treatment was observed. Apoptosis induction was observed. In vivo study, combination therapy was superior to mono therapy. Conclusions: Synergistic effect of combination treatment with caffeine and valproic acid in osteosarcoma was observed in vitro and in vivo. We will investigate the mechanism of synergistic effect precisely.

Date: 2012-11-30

Session: Tumours: Pathology & Alternative Treatments

Time: 08:30 - 10:00

Room: Dubai A+B

Abstract no.: 31139

STUDY OF 50 CASES OF SCAPULAR TUMOURS

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TUMOURS OF SCAPULA ARE NOT UNCOMMON, IF NOT COMMON. A STUDY OF 50 CASES OF SCAPULAR TUMOURS FROM 2000 TO 2010 THE TUMOURS VARIES FROM BENIGN, PRIMARY MALIGNANT, METASTATIC & TUMOUR LIKE CONDITIONS LIKE ANEURYSMAL BONE CYST. MOST COMMON ARE PRIMARY MALIGNANT TUMOURS FOLLOWED BY METASTATIC LESIONS. AMONG THE PRIMARY MOST COMMON IS EWING, PNET FOLLOWED BY CHONDROSARCOMA. OSTEOSARCOMA, LYMPHOMA, MULTIPLE MYELOMA & UNDIFFERENTIATED MESENCHYMAL TUMOURS. METASTASIS ALSO INVOLVE SCAPULA WHICH CAN COME FROM PRIMARY ELSEWHERE & CAN SPREAD LOCALLY FROM UPPER HUMERUS AFTER CROSSING THE JOINT. THESE CAN BE LYTIC & BLASTIC TYPE. AMONG THE BENIGN MOST COMMON IS OSTEOCHONDROMA FOLLOWED BY OSTEOID OSTEOOMA. MOST COMMON PRESENTING SYMPTOM IS PAIN FOLLOWED BY SWELLING. IN CASE OF METASTASIS FEVER IS USUALLY ASSOCIATED & FOR A LONG TIME MAY BE TREATED AS INFECTION AS TUBERCULOSIS & FNAC CAN MISLEAD & LATER ON WHEN PATIENT DOES NOT RESPOND OPEN BIOPSY WILL DECIDE THE ISSUE. IT IS NOT UNCOMMON FOR METASTASIS TO PRESENT FIRST & THEN PRIMARY IS DETECTED. AGE GROUP VARIES FROM 8 YEARS TO 60 YEARS MEAN IS 34 YEARS. DURATION OF SYMPTOMS VARIES FROM FEW WEEKS TO 8 YEARS, AVERAGE THREE MONTHS. XRAY, C.T SCAN, MRI, BONE SCAN & PET SCAN. FNAC, CORE BIOPSY & OPEN BIOPSY, I.H.C MARKERS ALL WILL HELP DEPENDING ON THE CASE FOR DIAGNOSIS & PLAN TREATMENT. THE TREATMENT VARIES FROM EXCISION OF TUMOUR, CURETTAGE IN BENIGN TO SCAPULECTOMY TOTAL & SUB TOTAL DEPENDING ON PATHOLOGY. ALLOGRAFT, PROSTHESIS ARE NOT NEEDED. CHEMOTHERAPY & RADIOTHERAPY IN METASTATIC LESIONS ALONG WITH OTHER MODALITIES. PATIENT USUALLY SATISFIED WITH REMAINING FUNCTION FROM HAND & ELBOW

Date: 2012-11-30

Session: Tumours: Pathology & Alternative Treatments

Time: 08:30 - 10:00

Room: Dubai A+B

Abstract no.: 32082

MULTIPLE PERIPHERAL NERVE TUMORS : AN EXPERIENCE OVER 15 YEARS

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Multiple peripheral nerve tumors are seen only in neurofibromatosis and are hereditary. They present and develop in a variety of different ways. Three main groups are distinguished: von Recklinghausen neurofibromatosis or type 1; bilateral acoustic neurofibromatosis or type 2 and schwannomatosis recently defined as type 3. The diagnosis is made purely on clinical grounds. Cranial MRI and slit lamp examination are useful for classification. Surgical management for peripheral nerve tumors is similar. They must be treated in the same manner as single lesions: the definitive treatment depends on the resectable character of the tumor, which is usually only known after epineurotomy under an operating microscope. Schwannomas (resectable tumors) can be resected preserving nerve continuity. Prognosis is excellent (no recurrence or degeneration occurs). In case of persistent symptoms, a new exploration may be required to search for other localized tumor(s) unperceived at the first procedure. Unresectable tumors (neurofibromas) infiltrate the structural elements of the nerve fibers making complete excision impossible without altering the nerve fibers. Epineurotomy (associated with an interfascicular biopsy for pathology examination) allows decompression and can often provide symptom relief although moderate paresthesia may persist. Any new and rapid change noted at clinical examination (increase in volume, pain or neurological deficit) requires surgery because of potential malignant transformation of the neurofibroma into neurofibrosarcoma (type 1 only). The unpredictable clinical course of neurofibromatosis makes prolonged follow-up mandatory.

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Session: Tumours: Pathology & Alternative Treatments

Time: 08:30 - 10:00

Room: Dubai A+B

Abstract no.: 32391

CHANGING PATTERN OF PRIMARY MALIGNANT BONE LESIONS IN THE SOUTH OF IRAK

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A review of 200 patients with primary bone lesions will be discussed regarding, the time of presentation, the clinical features and the investigations required. Stress will be upon two vital points; one is the noticeable increase in the incidence and the second is the changing pattern of presentation. Also, comparison with other similar study will be presented, some strange points like malignancy at the site of implant or foreign body, bilateral osteogenic sarcoma, and bone to bone secondaries will be discussed too. Bone pain which is very significant in other studies was not significant in our cases, also the growth was extra ordinary, in addition to high mortality in a very short period of time.

Date: 2012-11-30

Session: Miscellaneous: Osteoporosis

Time: 10:30 - 12:00

Room: Dubai A+B

Abstract no.: 31055

KYPHOPLASTY USING 'PROPER TIME, LOW PRESSURE, SLOWLY, STAGED CEMENT INJECTION TECHNIQUE' FOR THE TREATMENT OF OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES

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【Objective】 To prospectively compare kyphoplasty using 'Proper time, Low Pressure, Slowly, Staged cement Injection Technique' ('Stage injection group') with kyphoplasty using traditional injection technique ('Traditional injection group') for the treatment of osteoporotic vertebral compression fractures. **【Methods】** The study population included 129 patients (160 vertebral fractures) in the 'Stage injection group' and 105 patients (128 vertebral fractures) in the 'Traditional injection group'. The mean follow-up period was 25.3 months and 24.7 months respectively. **【Results】** In the 'Stage injection group', VAS improved from 7.8 ± 1.3 preoperatively to 2.1 ± 1.9 at last follow-up ($P < .05$). The kyphosis angle improved from 17.90 ± 7.80 to 0.50 ± 7.50 at last follow-up ($P < .05$). In 'Traditional injection group', VAS improved from 7.5 ± 1.6 to 2.3 ± 2.5 at last follow-up ($P < .001$). Preoperatively, The kyphosis angle improved from 18.30 ± 8.50 to 8.70 ± 6.50 ($P < .05$). There was no significant difference in VAS, the anterior vertebral height and the kyphosis angle between the two groups both preoperatively and postoperatively ($P > 0.05$). There was no significant difference in the occurrence of new fractures of vertebral bodies of the 'Stage injection group' (7.8%) versus the 'Traditional injection group' (7.6%). There were only 3 patients having cement leakage (2.3%) in 'Stage injection group', which was significantly less than 'Traditional injection group' (8 patients, 7.6%) ($P < .05$). **【Conclusions】** kyphoplasty using 'Proper time, Low Pressure, Slowly, Staged cement Injection Technique' has significantly less cement leakage than kyphoplasty using traditional injection technique. It is better.

Date: 2012-11-30

Session: Miscellaneous: Osteoporosis

Time: 10:30 - 12:00

Room: Dubai A+B

Abstract no.: 31053

**KYPHOPLASTY FOR THE TREATMENT OF VERY SEVERE
OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES**

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Background: Osteoporotic vertebral compression fractures (OVCFs) are a common cause of back pain and subsequent functional impairment. Kyphoplasty is a minimally invasive interventional procedure which has gained wide clinical acceptance as an effective treatment option for OVCFs. However, vertebral fractures with greater than two-thirds loss of original height, termed very severe osteoporotic vertebral compression fractures (vsOVCFs), are technically difficult to perform. Objective: This study will evaluate the clinical outcome and technical feasibility of kyphoplasty in the treatment of vsOVCFs. Methods: Thirty-five patients were treated with kyphoplasty; a total of 49 vertebral bodies. All patients were followed-up for one year period. Outcome data (vertebral body height variation, degree of kyphosis, visual analog scale [VAS] score for pain, Oswestry Disability Index [ODI] score for function) were collected preoperatively, postoperatively, and at one year after treatment. Results: Thirty-five patients (49 vertebral bodies) were treated successfully with kyphoplasty. There were no complications from infection, bleeding, pulmonary embolism, epidural leakage or stroke. Osteoporosis was confirmed by pathology examination. Significant improvements in all of the outcome measures were observed postoperatively and throughout the duration of follow-up. The mean anterior vertebral body height variation improved from $21.6\% \pm 3.8\%$ preoperatively to $65.2\% \pm 11.6\%$ postoperatively ($p < 0.05$). Kyphotic angle improved from $(24.5^\circ \pm 5.4^\circ)$ preoperatively to $(10.2^\circ \pm 2.8^\circ)$ postoperatively ($p < 0.05$). The mean VAS score decreased significantly from presurgery to postsurgery (8.5 ± 1.3 to 3.4 ± 1.2 ; $p < 0.05$), as did the ODI score (79.2 ± 13.8 to 34.1 ± 8.8 ; $p < 0.05$). Conclusion: Kyphoplasty is an effective and safe procedure for the treatment of vsOVCFs.

Date: 2012-11-30

Session: Miscellaneous: Osteoporosis

Time: 10:30 - 12:00

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Abstract no.: 33006

THE REVENGE OF THE OSTEOCLASTS: A NEW EPISODE FROM THE ZOLEDRONATE DRAMA.

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Introduction: Zoledronic Acid (ZA) inhibits bone resorption through osteoclasts apoptosis. It was evaluated the densitometry, biomechanical and microtomographic effects of ZA on the femurs of ovariectomized rats after 12 and 24 months. Materials: Eighty female rats were prospectively assessed. Within 60 days animals were randomized in group O (bilateral ovariectomy) (n=40) and group S (sham surgery) (n=40). At 90 days old, groups were randomized in OZA (n=20), ODW (n=20), SZA (n=20) and SDW (n=20), according to the administration of ZA or distilled water (DW). Animals were euthanized at 12 (n=40) and 24 (n=40) months of age. The hip was selected for investigation. Results: At 12 months, a significant increase in bone density was observed in groups OZA and SZA compared with groups ODW and SDW ($p < 0.001$). Groups OZA and SZA had a significant increase in maximum load bone resistance compared with groups ODW and SDW ($p < 0.001$). A significant enlargement in cancellous bone volume was observed in groups OZA and SZA, compared with groups ODW and SDW ($p < 0.001$). At 24 months, the bone density in groups OZA and SZA was the same compared with groups ODW and SDW ($p = 0.55$). The maximum load bone resistance in groups OZA and SZA was the same compared with groups ODW and SDW ($p = 0.61$). The cancellous bone volume in groups OZA and SZA was the same compared with groups ODW and SDW ($p = 0.59$). Conclusion: Zoledronic Acid increased bone density, bone load resistance and cancellous bone volume at 12 months, but not at 24 months.

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Session: Miscellaneous: Osteoporosis

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Abstract no.: 31705

DUAL SLIDING SCREW SYSTEM TREATMENT FOR THE FEMORAL NECK FRACTURES IN THE ELDERLY

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[Purpose] Osteosynthesis method for femoral neck fracture for aged patients are many. We examined the superiority of the Dual Sliding Screw System(made in Japan). The 440 cases (93 male, 347 female) of femoral neck fracture in over 60y.o. (60 to 102) patients were operated for six years. The osteosynthesis for the Garden □•□, and the prothesis exchange for Garden□•□ were mainly selected. Early weight bearing was permitted. In the case of osteosynthesis, fracture healing and complications(telescoping· pain· reoperation) were examined. [Results] 188 internal fixation (CHHS 3•Hansson149•Dual SC36),252 prothesis surgeries (UHA251 •THA1) were carried out. Reoperation after osteosynthesis was performed in 21 (Nail removal 2 •Nail exchange 2 UHA13 • THA2 •Girdle Stone 2). [Conclusions] The Dual SC procedure is a simple one compared to other fixation methods with less back-out and cut-out problems. The barrel-supporting plate is useful to neglect varus and rotational deformity. The quality of bone, reduction, fixation affected the outcome of osteosynthesis in addition to the used materials. In this paper, I examine several cases.

Date: 2012-11-30

Session: Miscellaneous: Osteoporosis

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Abstract no.: 32353

RELATIONSHIP BETWEEN STATE OF BONE TISSUE AND KNEE OSTEOARTHRITIS IN POSTMENOPAUSAL WOMEN

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The aim was to study the age-related particularity of relationship between structural-functional state of bone tissue and knee osteoarthritis (KO) in postmenopausal women. Material and methods. 175 postmenopausal women aged 50-79 years old with KO were examined, the control group consisted of 60 healthy women. Bone state was measured by Dual-energy X-ray absorptiometry "Prodigy" (DXA), calcaneus quantitative ultrasound (QUS) denditometry "Sahara", digital X-ray radiogrammetry (DXR) of the II-IV metacarpal bones (OSTIM+). Results. We found the significant correlation between indices of QUS and presence and stage of KO in postmenopausal women. In patients with I stage of KO data were significantly higher compared with healthy women, but in patient with III stage of KO they were significantly lower (Stiffness index: 0 st. KO-76.5±16.4; I-83.6±15.9; II-71.0±13.6; III-67.8±14.1; F=4.33, p=0.005). Analysis of aging particularities showed that significant differences QUS data were in postmenopausal women aged 50-59 and 60-69 years old with knee osteoarthritis. We did not found significant relationship between indices of DXA (lumbal spine, neck, total femur) and DXA and presence/stage KO, except bone mineral density (BMD) of total body and total spine. These indices were significantly higher in women with III stage of KO compared with healthy patients and women with early stages of osteoarthritis (0 st. KO - 0.90±0.12; I - 1.00±0.10; II -1.01±0.15; III - 1.08±0.12 g/cm²; F=7.31, p=0.0001). Conclusion. Presence and stage of KO had significantly influence on QUS data, but not on DXA indices (lumbal spine, neck, total femur) and digital X-ray absorbtometry.

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Session: Miscellaneous: Osteoporosis

Time: 10:30 - 12:00

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Abstract no.: 32358

EFFECT OF STRONTIUM RANELATE ON VERTEBRAL PAIN SYNDROME AND FUNCTIONAL ABILITIES IN POSTMENOPAUSAL WOMEN WITH SYSTEMIC OSTEOPOROSIS

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Aim. To evaluate the effect of strontium ranelate in treatment of systemic osteoporosis in post menopausal women. **Materials and methods.** There were examined 894 post menopausal women with systemic osteoporosis (average age $59,97 \pm 10,57$ years, average height $161,82 \pm 7,09$ cm, average weight $71,32 \pm 13,44$ kg). Evaluation of pain syndrome and level of physical activity was carried out with visual analogue scale (VAS). Examination was performed before onset of treatment and after a four, eight and twelve 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 12 months. **Results.** The patients had the risk factors of osteoporosis: 28 % of patients had osteoporotic fractures in their anamnesis; 17% – hip fractures in mother or father of patients, 12% – smoking, y 8% – alcohol abuse, 27% of patients have taken corticosteroid tablets for more than 3 month. We observed a reliable decrease of vertebral pain syndrome (after treatment – 2.97 ± 0.77 , after four months – 2.24 ± 0.85 , after eight months – 1.61 ± 0.94 ; after twelve months – 1.24 ± 1.04 ; $p < 0.00001$) and increase of functional abilities of patients (after treatment – 1.50 ± 0.67 , after four months – 2.08 ± 0.52 , after eight months – 2.67 ± 0.53 ; after twelve months – 2.88 ± 0.63 ; $p < 0.00001$). **Conclusion.** It has been demonstrated that strontium ranelate treatment significantly decreases pronounced vertebral pain syndrome and improves functional abilities of patients in the post menopausal women.

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Session: Miscellaneous: Osteoporosis

Time: 10:30 - 12:00

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Abstract no.: 33115

LOCKED PLATE FIXATION IN OSTEOPOROTIC HUMERAL SHAFT FRACTURES

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Introduction: Fractures of the humeral shaft in the elderly osteoporotic patients represent a challenge to the orthopaedic surgeon with no ideal method of treatment and scarce mentions in literature. We present results of our case series of patients treated by open reduction and internal fixation with locked plates. Methods: Eleven patients with osteoporotic fractures of the shaft of the humerus have been included in this study. Their average age was 67.6 (range 45-96) years. All patients were treated by open reduction and internal fixation using a locked plate providing angular stable fixation. Follow up averaged 24 (range 18-30) weeks. Assessment was done by serial radiographs at six weeks intervals to note radiographic signs of union and by examining range of motion at shoulder and elbow joints. Results: All eleven patients have proceeded to full union. One patient had a post-operative radial nerve palsy that recovered within 18 weeks. Average time to union was 24 (18-30) weeks. All patients had good function at the shoulder and elbow joints. Conclusion: Fixation of osteoporotic fractures of the humeral shaft with angular stable locked plates gives very good results and is our recommended method of treatment.

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Session: Miscellaneous: Osteoporosis

Time: 10:30 - 12:00

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Abstract no.: 32588

NEW HOPE IN GERIATRIC TRAUMA? - INNOVATIVE INTRAMEDULLARY STABILIZATION BY MEANS OF A PHOTODYNAMIC POLYMER SYSTEM - INITIAL CLINICAL EXPERIENCE

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In osteoporotic bone implant failure is a frequent complication. The minimally-invasive technique presented allows the surgeon to stabilize fractures in poor quality bone with early onset of mobilisation and weight bearing. The method used integrates the properties of light cured (photodynamic) plastics, used successfully for decades in dentistry, filled into Dacron (PET) balloon catheters that have been used interventional radiology and cardiology. This product was used outside the scope of its cleared indications under compassionate use with patient consent due to the unique challenges these fractures presented. In Seldinger-technique a balloon catheter is inserted into the marrow cavity which has been previously expanded with use of a flexible cannulated drill. The balloon is filled with liquid plastic monomer, and using a system of visible blue light at a wavelength of 436 nm, is converted into a hard polymer. So far two patients were treated after suffering a new fracture of the humeral shaft just at the proximal end of the inserted plates for their initially treated distal humerus fracture. The proximal screws of both distal humeral plates were removed, the implant introduced in an antegrade fashion, the plates refixed to the stable bone/plastic-complex and finally the implant was locked with a screw proximally. Herewith a very stable situation could be achieved. Postoperative immobilisation time was six days in an above elbow cast following physiotherapy. The patient customized implant is characterized by its high restoring force and its excellent rotational stability. The lack of X-ray-density provides full assessment of the entire bone. Additionally it offers the opportunity of increasing stability by locking with screws, placed at any angle, at any reasonable place anatomically.

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Time: 10:30 - 12:00

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Abstract no.: 32274

TREATMENT OF TROCHANTERIC FEMORAL FRACTURES WITH THE GAMMA3-NAIL – PRELIMINARY RESULTS OF A MONITORED INTERNATIONAL PROSPECTIVE CLINICAL FOLLOW-UP STUDY

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INTRODUCTION: A study was initiated to investigate the results of a singular-device for the treatment of trochanteric-femoral fractures, the Gamma3-nail. Although there have been smaller trial investigating different aspects of treatment with this device, a large scale investigation to assess safety and efficiency is still lacking. **METHODS:** The Gamma3 study is an international-multi centre prospective study. The study was approved by the local ethical-committees. Included were patients >50yr that required treatment with a gamma3-nail. From 4/2006, a total of 353 consecutive patients (72% female) have been enrolled from 6 sites in. Median age was 83yr (50-98). Included in this paper are all patients that have completed the four months follow-up assessment (n=194), 22 patients deceased before the 4 month-F/U (11.3% mortality). Assessed were the MerledAubigne-, Zuckerman-, Parker Mobility- and the Sahlgrenska Score and Radiographs. **RESULTS:** The index procedure was possible in all cases; there was 1 technical complication (1.1%). In 1 case a fracture under the nail-tip occurred 11d after surgery, in 3 cases a screw cut out occurred. In 2 cases the lag-screw caused pain, both cases were revised. Reoperation-rate was 6.6%. At the 4Mo-F/U assessment (n = 194) the median Merle d'Aubigné score was 12.00p (7-18). There was a significant increase in the ADL and mobility scores from the postoperative to the 4-month measurement. **CONCLUSION:** The study shows the Gamma-3-nail to be safe and effective with theatre times and complications comparable to other modern implants. Implant failures in the early period appear to be mostly related to implantation technique.

Date: 2012-11-30

Session: Miscellaneous: Osteoporosis

Time: 10:30 - 12:00

Room: Dubai A+B

Abstract no.: 32208

TREATMENT FOR OSTEOPOROSIS IN THE HIP FRACTURE

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【Introduction】 The hip fracture is a common trauma in the elder people in the world. The number of patients has increased in many countries every year. In this report, the operated cases with hip fracture is statistically analysed. **【Method】** 1333 cases with hip fracture treated in 42 national hospitals belonging to National Hospital Organization between from April 2006 to March 2009 are reviewed. They are 262 males and 1071 females. They are evaluated at the point of operation age, fracture type, complications on admission, operative method, post-operative complications, gait ability and the history of treatment for osteoporosis. **【Results】** The age distribution is as follows, 514 cases in eighties, 393 in seventies, 202 in nineties and 224 in other ages. There are 636 cases with intertrochanteric fracture, 516 with femoral neck fracture, 147 with subtrochanteric fracture and 44 with unknown types, Complications on admission are recognized in 20.4% of the patient, 538 cases are operated by femoral nail system, 423 cases by hip prosthesis, 157 cases by compression hip system and 144 cases by screw system. Postoperative complications are found in 13%. Gait ability has been disturbed after surgery in many cases. 204 cases of 1333 cases are treated for osteoporosis before trauma.

【Conclusions】 The hip fracture is expected to increase every year according to the increase of elder population. It seems that the early beginning of the treatment for osteoporosis is the most important to prevent the increase of the hip fracture.

Date: 2012-11-30

Session: Miscellaneous: Osteoporosis

Time: 10:30 - 12:00

Room: Dubai A+B

Abstract no.: 30941

SYSTEMATIC REVIEW OF TIP APEX DISTANCE (TAD) IN DYNAMIC HIP SCREW (DHS) FIXATION OF HIP FRACTURES

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Dynamic Hip Screw (DHS) fixation of extra-capsular femoral neck fractures, is based on tension band principle which allows the screw to slide within the barrel to enable compression of the fracture when the patient bears weight. It only works in the presence of intact medial wall and so cannot be successful in reverse oblique fracture. However, it is important that the technique of fixation is precise and should abide by the principle of Tip Apex Distance (TAD) which is critical to the outcome and accurately predicts failure of fixation. Methodology: A systematic review of articles published in PubMed/Medline, from 1991 to 2011, was carried out to critically analyse common practice with regards to DHS fixation of extra-capsular femoral fractures, and review the recommendations of previous authors, with regard to the effect of TAD in DHS fixation. Results: 48 published articles were found relevant to the review. 2009 had the highest number of relevant publications (10), followed by 2010 (8), 2005 (7), and 2011 (5). Injury journal has the highest number of relevant publications (9), followed by International Orthopaedics (6), JBJS Br (4), JBJS Am (3), and Orthopaedics (3). Conclusion: Although some new devices have theoretical and biomechanical advantages over the DHS, they are not superior in terms of failure rate and functional outcomes, provided the principle of TAD is adhered to. Therefore, DHS still remains the gold standard for the treatment of stable intertrochanteric fractures in suitably selected patients. Intra-medullary devices are better for sub-trochanteric or very osteoporotic fractures.

Date: 2012-11-30
Session: Miscellaneous: Osteonecrosis
Time: 14:30 - 16:00
Room: Dubai A+B

Abstract no.: 31211

OSTEONECROSIS AFTER CHEMOTHERAPY FOR BLOOD MALIGNANCIES IN PEDIATRIC PATIENTS: ONE COMMUNITY'S EXPERIENCE

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Introduction: Osteonecrosis (ON) is one of the serious complications of high-dose chemotherapy in patients with childhood malignancies. This study describes its incidence and main risk factors and evaluates current treatment options in this younger age group. Patients and Methods: Our cohort consisted of 105 patients diagnosed as having acute lymphoblastic or myeloid leukemia or non-Hodgkin lymphoma before the age of 18 (mean 8.16 ±5.05) years and treated by current BFM-Protocols in our university hospital between 1990 and 2010. Patients with ON were evaluated and treated. Results: Eight children (7.6%) developed ON. There were 4 males and 4 females with an average age of 14.6 ± 2.5 years and a total of 18 osteonecrotic sites, mostly the femoral head (n: 12). All of them received steroid treatment with a mean cumulative dose of 7578 mg prednisone (SD ±3798 mg). Asparaginase was given in 5 patients in full therapeutic dose averaging 122560 (SD ±6315) IE. The time between the start of chemotherapy and the diagnosis of ON averaged 16.8 (SD ±12.4) months. The initial treatment of ON included 11 core decompressions and 2 bipolar arthroplasties. Later on, 2 corrective osteotomies were done and 3 patients (4 hips) finally needed a total joint replacement. Conclusion: Osteonecrosis is a rare but serious complication of childhood-chemotherapy that mostly affects weight-bearing epiphyses. Its risk increases with older patient age. No sex differences were noted. The chances of a successful treatment rise the earlier the diagnosis. This may support early ON screening specially for high-risk patients.

Date: 2012-11-30

Session: Miscellaneous: Osteonecrosis

Time: 14:30 - 16:00

Room: Dubai A+B

Abstract no.: 31498

ANALYSIS OF TREATMENT OF OSTENECROSIS OF FEMUR HEAD BY CORE DECOMPRESSION AND FIBULAR STRUT GRAFTING.

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Introduction: Various head preserving surgeries have been used for osteonecrosis of femoral head to avert the need for THR. Core decompression and fibular strut grafting is one of the joint preserving surgeries. There are only a few randomized trials in which the efficacy of core decompression & fibular strut grafting has been evaluated. Hence the need for such a study becomes important. Materials and Methods: 32 hips in 22 patients with Ficat & Arlet stage I, II & III osteonecrosis of femoral head treated by core decompression and fibular strut grafting at our hospital were assessed clinically by Harris hip scoring system and radiographically for the position of the graft and progression of the disease. Out of 32 hips, 4 hips were lost for follow up. Results: At 2-5 years follow-up of 28 hips, seven cases had Harris hip scoring of > 90. Radiographic evaluation showed collapse of the femoral head in two cases (Stage IIb) and one case showed early arthritis. Majority of the patients (89%) had significant pain relief. Conclusion: In our study we have 87% cases with good to excellent results with majority (89%) patients showing significant pain relief. Hence the results of our study strongly suggest that core decompression and fibular strut grafting is one of simpler and effective method in forestalling the need for THR in stage I, II and III osteonecrosis of femoral head. To prevent further collapse graft placement should be in the antero-superior quadrant and within 10mm of the subchondral bone.

Date: 2012-11-30

Session: Miscellaneous: Osteonecrosis

Time: 14:30 - 16:00

Room: Dubai A+B

Abstract no.: 31872

HIGH ENERGY EXTRACORPOREAL SHOCK WAVES THERAPY FOR NONTRAUMATIC OSTEONECROSIS OF THE FEMORAL HEAD. AT LEAST 5 YEARS' FOLLOW-UPS.

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Extracorporeal shock wave therapy (ESWT) for early-stage osteonecrosis of the femoral head has been reported with promising early results. A retrospective review was conducted of patients who underwent high energy ESWT between October, 2004 and January, 2007, including 75 hips in 50 patients with ARCO stages I-III nontraumatic osteonecrosis of the femoral head. The changes of clinical scores and MRI were administered to evaluate the effects. The follow-ups were for at least 5 years (5-7 years). Harris hip scores were increased in 46 hips (61.3%) at the last follow-ups. The clinical success rates were 95.7% in stage I, 97.6% in stage II and 45.4% in stage III. There were 19 hips (25.3%) with improved ARCO stage, including 5 hips with healed. The imaging success (with improved or unchanged stage of lesion on MRI) were 82.7% for all patients, with 95.7% in stage I, 85.4% in stage II and 45.4% in stage III, respectively. Five patients (seven hips) had progression to stage-IV or V disease, with femoral head collapse. The mid-term results suggest that high energy extracorporeal shock waves therapy may offer an alternative treatment for the early stage osteonecrosis of femoral head.

Date: 2012-11-30

Session: Miscellaneous: Osteonecrosis

Time: 14:30 - 16:00

Room: Dubai A+B

Abstract no.: 33023

MANAGEMENT OF NONTRAUMATIC OSTEONECROSIS OF THE FEMORAL HEAD USING IMPACTION BONE GRAFTING VIA A LIGHT BULB WINDOW THROUGH A SAFE SURGICAL DISLOCATION APPROACH

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Osteonecrosis of the femoral head is a disorder than can lead to femoral head collapse. We evaluate the clinical results of impacted bone graft via bone window on the head neck junction for treatment of non traumatic osteonecrosis of femoral head through a safe surgical dislocation approach. We treated 18 hips in 12 patients with femoral head necrosis by impaction of antogenous iliac bone graft via bone window on the head neck junction (light bulb) through a safe surgical dislocation approach. There were 7 females and 5 males with an average age of 33 years with stage II and III Osteonecrosis of the femoral head according to ARCO (Association research circulation osseous). The outcome was determined by changes in the Harris hip score and progression in radiographic stages. Patients were followed up from 1 to 3 years. The Harris hip score was 86 after 1 year follow up when compared with the preoperative one 62. Pain relief with preservation of the spherical shape of the femoral head was obtained in 8 patients while 3 patients had significant limitation of the range of motion with no significant pain during walking & no significant loss of spherical femoral head shape. One case had poor results with marked limitation of range of motion and significant head collapse. Impaction of bone graft via light bulb bone window through a safe surgical dislocation approach may be the treatment of choice in non traumatic osteonecrosis of the femoral head at the pre-collapse stage.

Date: 2012-11-30

Session: Miscellaneous: Osteonecrosis

Time: 14:30 - 16:00

Room: Dubai A+B

Abstract no.: 30943

TREATMENT OF FREIBERG'S DISEASE WITH MODIFIED WEIL'S OSTEOTOMY 'A CASE SERIES'

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The initial treatment of choice for Freiberg's diseases are non operative conservative management, when conservative treatment has failed or for very refractory cases. There are various surgical procedures. Most of these procedures involve osteotomies to the metatarsal. We report one of the large series of modified Weil's osteotomies in 11 feet with Freiberg's diseases of stage 2 and above, with a mean follow up of two and half years, and a mean age of 38.7 years. Eight feet -72.7 % had Freiberg's diseases affecting the second metatarsal and three feet -27.3% had Freiberg's disease in the third metatarsal head. Using the AOFAS scoring the mean pre-operative score was 48.1 and mean post operative score was 88.9. The mean improvement was 40.8. One patient had a superficial post operative infection that was treated with antibiotics. We recommend that modified Weil's osteotomy is an effective procedure for the treatment of Freiberg's disease as it has a very good outcome and few complications .No patients had transfer metatarsalgia.

Date: 2012-11-30
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Time: 14:30 - 16:00
Room: Dubai A+B

Abstract no.: 30763

AVASCULAR NECROSIS FEMORAL HEAD TREATED WITH TENSOR FASCIA LATA MUSCLE PEDICLE BONE GRAFT:LONG TERM RESULTS

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INTRODUCTION: Avascular necrosis of the adult remains one of the challenging problems faced by orthopaedic surgeon. It affects primarily young patients and it is bilateral in more than 60% patients. Results of head preserving surgery are better than arthroplasty. Muscle Pedicle bone graft is simple yet effective surgery for early stage AVN to stop progression of the disease. **MATERIAL&METHOD:** In our series 19 cases with 26 hips of non traumatic AVN with Ficat Arlet Stage 2 and Stage 3 were included. Mean age of surgery was 30.84 years. Alcohol and Corticosteroids were leading causes. Average duration between onset of symptoms and surgery was 4.95 months. Patient were evaluated with pain grading, Harris Hip score preoperatively and post operatively and radiologically. **RESULTS:** In present series 19 hips shows complete relieve in pain, Harris score increased from a mean of 50 points to 76 at last follow up. Radiologically 8 hips (31%) improvement in radiological stage, remain unchanged in 7 (43%) and 7 (26%) hips got deteriorated. **CONCLUSION:** Muscle pedicle bone graft is a very good treatment modality especially in early stage of the disease and it also doesn't hamper the results of future arthroplasty if needed.

Date: 2012-11-30

Session: Miscellaneous: Osteonecrosis

Time: 14:30 - 16:00

Room: Dubai A+B

Abstract no.: 32620

EARLY DIAGNOSIS OF OSTEONECROSIS USING MRI AND NUCLEAR SCAN IN POST-TRAUMATIC POSTERIOR DISLOCATION OF HIP

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Introduction: Avascular necrosis (AVN) of femoral head is one of the dreaded complications of posterior dislocation of hip. Most commonly young persons are affected. It is very important to diagnose AVN early in those cases where hip has been dislocated for more than 12 hours. The present study planned to assess the role of Magnetic Resonance Imaging (MRI) and Single Photon Emission Computed Tomography(SPECT) in the early diagnosis of post-traumatic AVN. Methods: 23 patients aged between 15-50 years with dislocation or fracture dislocation of hip joint where reduction was delayed for more than 12 hours were enrolled in the study after getting written informed consent. The patients were followed up with serial clinical examination, SPECT and MRI at 6, 12 and 24 weeks. Results: Out of the 5 cases of post-traumatic AVN, we could diagnose 1 case of AVN clinically. MRI and Nuclear scan detected all the 5 cases. MRI diagnosed 3 cases at 6 weeks and 2 cases at 12 weeks. Nuclear scan diagnosed 2 cases at 6 weeks and 3 cases at 12 weeks. Conclusion: Nuclear scan is more specific than MRI to diagnose AVN in traumatic cases. MRI is highly sensitive for screening of AVN. If AVN appears early on MRI i.e around 6 weeks, it is less likely to regress or disappear.

Date: 2012-11-30
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Time: 14:30 - 16:00
Room: Dubai A+B

Abstract no.: 31305

OUTCOME OF ORTHOPAEDIC COMPLICATIONS OF SICKLE CELL DISEASES FROM A DISTRICT HOSPITAL

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Sickle cell diseases are very common in African especially in the sub Sahara region. It is the most common hemoglobinopathy. Sickle cell diseases affect most systems in the body but the musculoskeletal system is the most affected. We reviewed the orthopaedic complication from 2004 to 2010 from a district hospital in Port-Harcourt, Nigeria. A total of 61 orthopaedic complications of which there was 41 osteomyelitis with the tibia most commonly effected , 6 avascular necrosis of the femoral head and 8 avascular necrosis of the humeral head, 4 spine. 3 medial femoral condyle. The mean age was 27.4 years (5-44 years), 38 females and 20 males. Staphylococcus aureus was isolated in 28 of the osteomyelitis and salmonella in 12. The entire patient with avascular necrosis were referred to the tertiary centre, and those who had total hip replacement had a very poor outcome with 80% failure in 4 years. Where the osteomyelitis was diagnosed early and antibiotics commences the results were very good with only 30% progression to chronic osteomyelitis. In the chronic ones with an aggressive approach of debridement, guttering and sequestration, antibiotic beads and antibiotics were given for 6 weeks, 90% had no recurrence in the follow up. We recommend that early diagnosis, treatment and aggressive surgery in osteomyelitis are associated with a very good outcome.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics

Time: 16:30 - 18:00

Room: Dubai A+B

Abstract no.: 32951

THE INCIDENCE OF DEEP INCISIONAL SURGICAL SITE INFECTION OF SPINAL SURGERY

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Introduction: Prevention of deep incisional surgical site infection (DSSI) is essential to achieve good outcome of spinal surgery. Purpose: The purpose of this study is to clarify the incidence of DSSI of our institute to create a strategy for DSSI prevention. Materials: Instrumentation surgery (IS) and decompressive surgery (DS) were performed in 455 cases and 719 cases, respectively, in our institute between 1997 and 2011. There were 291 IS and 25 DS of cervical spine, 49 IS and 33 DS of thoracic spine and 125 IS and 651 DS of lumbar spine. Results: DSSIs were occurred in 2 cases of IS of the cervical spinal surgeries, in 1 case of IS of thoracic spinal surgery and in 3 cases of IS and in 3 cases of DS of lumbar spinal surgeries. The incidence of DSSI of IS and DS was 1.32% and 0.42%, respectively. The incidence of DSSI of IS was three times higher than that of DS. Discussion: The Japanese orthopedic association surveillance revealed that the incidence of DSSI in spinal surgery in Japan was 3.73%. Our results showed that the incidence of DSSI of our institute was lower than that result. We follow the guideline of DSSI prevention of Japanese orthopedic association. We use class 100 bio-cleanroom for spinal surgery, however, strict regulation for admission of personnel into the operating room was not defined. We have to make strict regulation about the number of personnel admitting the room, standard precaution, etc. to decrease the incidence of DSSI.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics

Time: 16:30 - 18:00

Room: Dubai A+B

Abstract no.: 30860

DAY SURGERY IN ORTHOPAEDIC TRAUMA: THE COST SAVINGS AND LENGTH OF STAY POTENTIAL

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Background: Increasing the use of day surgery reduces length of stay and hospital costs. This study looks at 2190 trauma cases dealt with by orthopaedic department at Addenbrooke's Hospital (Cambridge University Hospitals NHS Foundation Trust) over 15 months (July 2010 – September 2011). The primary outcome measure was to identify which operations, could have been performed in the day surgery setting by retrospective analysis. Methods: We used the orthopaedic department's trauma database to find all 2190 trauma cases between July 2010 and September 2011. Specific and detailed exclusion criteria were applied both to the type of injury and the type of patient. These criteria included the patient's age, specific soft tissue injuries, location and types of fractures, and the presence of polytrauma or infection, amongst others. Using this analysis, 436 cases were identified as suitable for day surgery. Using the hospital's admissions and discharge database patient length of stay was calculated, and used to identify date of operation, allowing analysis of hospital stay pre- and post-surgery. Cost of theatres and hospital beds were obtained from the hospital finance department. Results: 436/2190 (19.9%) of cases were identified as suitable for day surgery, with a potential to save 391 preoperative bed-days, which translates to a saving of at least a £60,433 per annum for the Trust. Conclusion: This will help to reduce the patient's length of stay in hospital, relieving pressure on availability of hospital beds and theatre sessions. It may result in increased patient satisfaction and save considerable amount of money.

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Room: Dubai A+B

Abstract no.: 31145

ORTHOPAEDIC ISSUES IN A WARZONE; EXPERIENCE FROM AFGHANISTAN

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War has always been an impetus for change. As wars advance and we produce new technology to kill people, we also produce new methods and tactics to save people. The treatment of war wounds is an ancient art, constantly refined to reflect improvements in weapons technology, transportation, antiseptic practices, and surgical techniques. Throughout most of the history of warfare, more soldiers died from disease than combat wounds, and misconceptions regarding the best timing and mode of treatment for injuries often resulted in more harm than good. Since the 19th century, mortality from war wounds steadily decreased as surgeons on all sides of conflicts developed systems for rapidly moving the wounded from the battlefield to frontline hospitals where surgical care is delivered. And according to US statistics 70% of the injured has extremity trauma and about 80% need Orthopaedic intervention, thus Orthopaedic surgeons play a very important role in war zones and thus we need to start having some knowledge about these injuries as the globalization has taken an effect any orthopaedic surgeon can get involved in getting war related patients to treat. We here present our experience from Afghanistan and some tips we developed which are now part of our daily practice now.

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Session: Miscellaneous: General Orthopaedics

Time: 16:30 - 18:00

Room: Dubai A+B

Abstract no.: 32979

BLAST TRAUMA ANALYSIS IN NATURAL DISASTERS

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Introduction: Blast injuries arrested attention before as combat traumas became one of the most frequent surgical pathology in peace time and can be considered in the frame of military traumatology and medicine for disaster. Blast injuries in combat conditions deals with young contingent of servicemen, while in civil life – with children, women and old people. The latter are extremely vulnerable with regard to their mental state. These injuries in peace time can be characterized by not only the type and power of explosion but by some circumstances such as, emergence of contaminated zones after demolition of industrial objects. Methods: The following groups of victims could be distinguished: with mechanical injuries only; with combination of mechanical and thermal injuries; with combination of mechanical, thermal and radiation injuries; with combination of mechanical and chemical injuries. Results: The types of injure dictates peculiarities of emergency medical rendering and of specialized treatment.

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Room: Dubai A+B

Abstract no.: 32447

SERUM LACTATE AS PREDICTOR FOR DEVELOPMENT OF FAT EMBOLISM SYNDROME

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Background: There is no study in literature with appropriate quantification of clinical variables namely polytrauma (quantified using New Injury Severity Score), shock using its biochemical indices and Fat Embolism Syndrome (FES) using Gurd's criteria. The purpose of this study is to look for the relationship between injury severity, post-traumatic shock and subsequent preponderance for development of FES. Materials and Methods: In a prospective study of 48 skeletal injury patients, in the age group of 16-40 years of both sexes, who presented within 12 hours of injury at a level I trauma centre were monitored over a period of 72 hours. Correlation was made between Injury Severity Score, severity of shock at admission as assessed by marker like serum lactate and base deficit to subsequent development of FES. Results: 25 out of the 48 patients had admission lactate values more than 22 mgm/dl and of which 10 developed FES. Among those with serum lactate values of 22 mgm/dl or less, only 1 patient developed FES. The correlation between admission lactate and subsequent development of hypoxemia and FES came out to be statistically significant ($p=0.003$). Where as the correlation of base deficit and hypoxemia was found insignificant ($p=0.677$). Conclusions: Serum lactate level in the initial period of polytrauma can be used as a valuable biochemical marker for prediction of subsequent development of significant hypoxemia and FES, whereas base deficit do not.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics

Time: 16:30 - 18:00

Room: Dubai A+B

Abstract no.: 32476

MOVING BEYOND GUSTILO'S CLASSIFICATION – GANGA HOSPITAL SCORE IN DECISION MAKING IN OPEN INJURIES.

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Open injuries of limbs offer major challenges in management in both developed and developing world. Gustilo's classification has been a landmark in our understanding of these difficult injuries. However, Gustilo's classification has the following disadvantages. The description is very subjective and it naturally leads to a high intra and inter observer error rate. The classification is highly dependant on the severity of soft tissue injury and it does not globally evaluate the injury to bones and the nerves. Co-morbid factors are also not considered. Currently available scores such as MESS, NISSA, LSI, PSI etc have all been designed to assess limbs with combined orthopaedic and vascular injuries and are poor predictors for Type IIIb injuries. Ganga Hospital score was evolved to overcome the lacuna for assessing complex IIIb injuries. The score was designed to grade the severity of the injury to the covering tissues, the bones and the functional tissues, grading the three components from 1 to 5. Seven co-morbid conditions known to influence the management and prognosis were given a score of two each. The total score was useful to predict salvage and the individual scores for covering and functional tissues were found to offer guidelines in the timing and nature of soft tissue reconstruction.

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Session: Miscellaneous: General Orthopaedics

Time: 16:30 - 18:00

Room: Dubai A+B

Abstract no.: 31600

INTERLEUKIN-6 AS AN EARLY MARKER IN FAT EMBOLISM SYNDROME-A CLINICAL STUDY

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Background: Fat Embolism is a complication of long bone fractures. It may progress to fat embolism syndrome, which is rare but involves significant morbidity and can occasionally be fatal. Because of the concern for pulmonary injury in FES patients, identifying a readily available serum marker that would assist in the assessment of progression of pulmonary inflammation. We investigated serum Interleukin-6 (IL-6) as a possible early marker for fat embolism syndrome; Materials and methods: In a prospective study of 48 patients in the age group of 16-40 years of both sexes, who presented within 6 hours of injury with long bone fractures and/or pelvic fractures at a level I trauma center were included and blood samples were taken for IL-6 level estimation at 6 hours, 12 hours and 24 hours. The patients observed clinically, and monitored biochemically and hematologically over a period of 72 hours. Gurd's criteria was used to diagnose FES. Correlation was made between sequential IL-6 levels in patients with FES and without FES; Results: 11 of 48 patients developed FES. On comparing the IL-6 values in patients with FES and without FES there was no significant difference between IL-6 values at 6 hours and 24 hours. There was highly significant difference ($P=0.000$) in IL-6 levels at 12 hours as a mean value of 130.91pg/ml in patients with FES and 72 pg/ml in patients without FES; Conclusion: Serum IL-6 is a possible early marker of fat embolism syndrome; Key words: Fat embolism syndrome(FES), Interleukin-6(IL-6), Gurd's criteria.

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Room: Dubai A+B

Abstract no.: 31068

EXTERNAL FIXATOR TO IM NAIL : CAN IT BE DONE IN SINGLE SURGERY?

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Purpose: This study was designed to evaluate the results of IM nail in treating fractures of long bones in patients in whom external fixator was removed minutes prior to surgery. **Methods:** There were 17 patients in whom conversion of EF to IMNail was done. The inclusion criteria, was open/closed fractures previously fixed with external fixator. The exclusion criteria, was Gustillo type IIIC injuries, bone loss and ipsilateral long bone fracture. Nailing of tibia was done in 9 patients (53%), femur nailing in 7 patients (41%) and humerus nailing in one patient (6%). There were 16 male patients (94%) and 1 female patient (6%). The average time from external fixation to conversion surgery was 63.4 days (Range: 4days to 199days). **Results:** The patients were evaluated for infection, radiographic parameters, range-of-movements, time-to-weight-bearing and complications/revision surgery. Five patients (29%) developed infection. The incidence of infection in tibial fractures was 44.4%and in femur fracture was 14.2%. Four patients/infections were cured with antibiotics alone. All patients had greater than 90 degrees flexion at knee joint. Fifteen patients were full weight bearing at 4 months. Two revision surgeries were done; bone grafting was done in one case while debridement plus screw removal in second. All patients were full weight bearing at 6 months. **Conclusion:** Conversion of EF to IMnail in single surgery can result in higher infection rates. The healing rate is very high. In settings of limited resources and increase patient burden, conversion of ex-fix to IM nail can be done in a single surgery.

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Room: Dubai A+B

Abstract no.: 32357

**"ORTHOPAEDIC DISABILITY IN THE END OF BONE AND JOINT
DECADE: WHERE WE ARE?"**

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BACKGROUND: Madhya Pradesh State Government in India launched a programme 'Sparsh Abhiyan' to identify people with disabilities on 1st May 2011; three lac fifty one thousands beneficiaries were identified. The Social Justice, Health, & Women and Children Development Department officials were involved in the survey of physically challenged persons in the Abhiyan. Gram Panchayat secretaries, school teachers and Anganwadi workers did the survey for the disabled people. **OBJECTIVES:** This Programme was to identify the detail status of Orthopedically Handicapped in Madhya Pradesh in the End of Bone and Joint Decade 2000-2010. **METHODS:** Disability camps were installed at all 313 development blocks of 50 districts in the Madhya Pradesh State. 29 Medical Camps were organized in Jabalpur district in Block, Tensile & Proper City level in the month of June & July 2011. A special District Medical Board was prepared with all speciality doctors with two Orthopaedic specialists. Comparison of this disability data was compared with the Global prevalence of disability especially with WHO references. **RESULTS:** 29 Thousands 350 were identified in Jabalpur district in which Orthopaedic disability constitutes 74 %. **CONCLUSIONS:** Orthopedically physically challenged persons are in the top of disability in the end of bone & Joint decade. Still Post Polio residual Paralysis constitutes one of the major causes for Orthopaedic Disability. CTEV is commonest Congenital Anomaly. Polydactyly with or without Syndactyly is not a common Congenital Anomaly in this district. Charm for handicap certificate was more observed in rural area as comparison to urban region.

Date: 2012-11-30

Session: Miscellaneous: General Orthopaedics

Time: 16:30 - 18:00

Room: Dubai A+B

Abstract no.: 31876

DEEP VEIN THROMBOSIS INCIDENCE AFTER MAJOR LOWER LIMB SURGERY; IS REALLY ALARMING?

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Introduction: Incidence of DVT after lower limb surgery has been reported between in 45% to 84% of patients after hip and knee surgery in the absence of prophylaxis In Western countries. There are various studies from Asian continent reporting incidence of DVT between 6%-60% after lower limb surgery. Few of studies from India had reported incidence ranging from 6% to 50%, but in most of these studies colour Doppler is used to detect DVT. Method: A prospective studies done at rural medical College, about 280 patients with major lower limb surgery were screened with ascending venography for DVT on operated limb and colour Doppler for contralateral limb at 6th post op day. Thrombi confined to the calf were classified as distal and those involving the popliteal or femoral vessels were classified as proximal Results: Average age of patients was 51.57 with range of 18 years to 99 years. The incidence of reported DVT, E was calculated. 12 patients had evidence of deep vein thrombosis. Of these 7 had proximal thrombus and 5 cases had distal thrombi. One patient had evidence of deep vein thrombosis in contralateral limb. Out of these patients pulmonary embolism was reported in only one patient. In the present study all the patients were screened routinely with colour Doppler and contrast venography.

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THE USE OF IONISING RADIATION IN THEATRES – ARE WE OVER EXPOSING OUR PATIENTS AS ORTHOPAEDIC SURGEONS?

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The use of ionising radiations (Xrays) in orthopaedic theatre has increased with the advent of newer fixation techniques. The objective of this study was to correlate the radiation exposure incurred by trauma patients undergoing surgery to the experience of the operating surgeon and to identify if the radiation exposure was compliant with national guidance of annual patient radiation exposure (IRR 1999). Data was prospectively collected during August 2010 to September 2011. The procedures included fractures of the distal radius, neck of femurs, nailing of femurs and tibia, ankle fractures, manipulations under anaesthesia of the distal radius and dislocated total hip replacements. The data was tabulated for the procedure, the grade of the surgeon operating, the time and total exposure dose of the radiation. Out of the 140 patients who underwent any of the procedures 70 were operated by the trainee and the rest by an orthopaedic consultant. Out of all the procedures except for intramedullary tibial nailing and ankle fixation the consultants used more radiation doses when compared to the trainee. Our results showed the experienced surgeons seem to use more time and radiation doses compared to the orthopaedic trainee possibly because they tend to take up the more complex cases. Nevertheless, the amount of radiation exposure is still well under the national accepted guidance. This suggests that the operating surgeon can be free from judgement for risk of excessive radiation to the patient and to use the im age intensifiers judiciously to ensure the best possible clinical outcome.

Date: 2012-11-30

**Session: 26 - IFPOS Mini Symposium - Paediatrics: Leg Length
Discrepancy & Miscellaneous**

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 32355

**MANAGEMENT OF CONGENITAL PSEUDARTHROSIS OF TIBIA IN
ADULTS: EARLY RESULTS**

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Purpose: Congenital pseudarthrosis of Tibia (CPT) remains an enigmatic problem even in children. Late presenters (adults) have added complexities in the form of severe deformity, limb shortening and soft tissue contractures. Methods: 5 patients with untreated CPT (3 Right, 2Left) presented to us at an average age of 26.4years. The angulation between the proximal and distal Tibia fragments was an average of 95.5 degrees suggesting severe soft tissue contractures and an average limb length discrepancy (LLD) of 5.86 cms. None of the patients had neurofibromatosis. All were treated with radical Tibia and Fibula pesudarthrosis excision, acute deformity correction,realignment and intramedullary nailing with square nail through the medial malleolus in Tibia. Copius bone grafting was done, 4 ring Ilizarov fixator was applied and a calcaneal ring added. Corticotomy was done between 1st and 2nd rings to achieve simultaneous lengthening. Results: Union was achieved in all patients at an average of 6.74 months. Average limb lengthening achieved was 5.69cm. At an average follow up of 24.4 months after fixator removal all patients are walking weight bearing on the limb and none have refractured. The limb length discrepancy has been restored to within 2.5 cms. 2 patients developed severe valgus deformity at the ankle and 1 patient had vascular insufficiency in the limb postoperatively due to acute docking. Adult CPT poses challenge with severe deformity and LLD but can be tackled adequately with a ring fixator which assures union & allows simultaneous bone lengthening and deformity correction.

Date: 2012-11-30

**Session: 26 - IFPOS Mini Symposium - Paediatrics: Leg Length
Discrepancy & Miscellaneous**

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 33009

MICROSURGICAL RECONSTRUCTION OF THE FOREARM IN CHILDREN

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In children with involvement of one of the forearm bones, clinical symptoms are the hand deviation and dysfunction of the wrist joint. Objective. Reconstruction of the forearm by vascularized autografts. Materials. At the Department for Reconstructive Microsurgery the microsurgical reconstructions of the forearm in 21 children were carried out. In all cases, we used vascularized tissue complexes. In lesions less than 50 per cent, the autotransplantation of 2nd metatarsal bone was carried out. When the affection exceeded 50 per cent, the vascularized autografts from fibula were used. These autografts were diaphyseal or epimetadiaphyseal ones. In the late period, the cosmetic state of the restored limb and the function of the wrist joint were estimated. Results. The maximum follow-up was seven years. In ten children after microsurgical reconstruction, a full restoration of the function of the wrist joint was observed. When used a vascularized graft with preservation of blood supply for the growth plate, its active functioning was marked. In five patients, an accelerated longitudinal growth of the reconstructed bone, when compared with the opposite side, was observed. It was explained by a reduced function of the growth plate on the opposite site due to sustained disease. In five children the correction of the length of the whole forearm was performed. In one child no marked improvement was noted. Conclusion. Thus, the use of autografts with axial type of blood circulation in children is an effective method for correction of forearm deformity and reconstruction of the wrist joint function.

Date: 2012-11-30

**Session: 26 - IFPOS Mini Symposium - Paediatrics: Leg Length
Discrepancy & Miscellaneous**

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 31585

**POSTERIOR AND ANTERIOR FEMORAL ROTATIONAL OSTEOTOMY AT
CHILDREN ALEH SAKALOUSKI, ALEKSANDR BELETSKI STATE UNION
THE REPUBLICAN SCIENTIFIC AND PRACTICAL CENTER OF THE
TRAUMATOLOGY AND ORTHOPEDY**

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We have used our own technique of intertrochanteric osteotomy with posterior or anterior 45- 90° rotation of the proximal part of the femur in 52 cases (50 patients). The indications for surgery were severe damage or deformity of the superior segment of the femoral head. The aims were elimination of load on the damaged superior segment of femoral head, restoration of the femoral head centralization, restoration of articular surface congruity. The long-term results studied in 2-25 years (the mean 7.3 years) after the operation. Trendelenburg test – negative in 43 cases. Limb-length discrepancy disappeared or decreased. The mean value of the epiphyseal quotient increased to 83, the epiphyseal-neck quotient - to 88 against 62 before the intervention, the neck-diaphyseal angle became 133° after the operation. Before the manipulation the Viberg angle only in 8 cases was equal to 20°-25°, after - in 43 cases it became equal to 20°- 40°(the average was 30°). The angle of vertical correspondence before the operation in 17 cases was equal to 70°-75° and in the others - 100°-140° (the average value was 110°). After the reconstruction the average value of this angle became 93° and in 33 cases it was equal to 90°. Good and excellent results were registered in 87 % of all the cases. The merits of the intervention are orienteishion of the femoral head in three dimensions, absence of angle deformities and negative influence on the growth plate of the femoral head, lengthening of the femoral neck and the limb.

Date: 2012-11-30

**Session: 26 - IFPOS Mini Symposium - Paediatrics: Leg Length
Discrepancy & Miscellaneous**

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 31731

**TELESCOPING VASCULARIZED FIBULAR GRAFT: A RELIABLE
METHOD FOR TREATMENT OF NONUNION WITH SEVERE
SHORTENING**

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Vascularized fibular grafts have proved reliable in the treatment of congenital pseudarthrosis of the tibia with a high success rate. However, severe shortening cannot be primarily corrected by this technique and requires a second-stage lengthening procedure. Ilizarov's method allows correction of shortening and axial malalignment together with the non-union. However, in the dysplastic type with severe shortening, corticotomy of the affected bone may result in delayed consolidation or recurrence of disease. In addition, the large distraction distance (equal to the amount of shortening plus the resulting defect after excision of the pseudarthrosis site) requires prolonged frame application, which may not be tolerated by the patient. We present a new technique combining vascularized fibular graft and Ilizarov distraction that allows simultaneous correction of shortening while treating the non-union in a single-stage operation. This method avoids corticotomy in the congenitally affected bone and markedly shortens the time of frame application.

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**Session: 26 - IFPOS Mini Symposium - Paediatrics: Leg Length
Discrepancy & Miscellaneous**

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 30722

**LONG TERM RESULTS AFTER QUADRICEPSPLASTY FOR
CONGENITAL DISLOCATION OF KNEE**

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MOHANTY, Pabitra Kumar SAHOO
SVNIRTAR, Cuttack, Orissa (INDIA)

Introduction- Congenital knee dislocation is a rare congenital deformity, which requires surgical treatment. Little long term data found in literature post operatively. We objectively evaluated the clinical, functional and gait analysis of patients at five year follow-up. Methods- Patients operated by quadricepsplasty were evaluated prospectively. Each patient examined clinically, functionally and by gait analysis in each visit up to 5 years. Results- Total knee range of motion was 120 degree with maximum number more than 90 degrees. Functional results show good knee specific and overall function. Video gait analysis show normal sagittal knee profile and valgus knee in coronal profile. Conclusion- Despite instability of the knee in clinical examination patients ambulate without brace and have a good functional range of motion.

Date: 2012-11-30

**Session: 26 - IFPOS Mini Symposium - Paediatrics: Leg Length
Discrepancy & Miscellaneous**

Time: 14:00 - 15:30

Room: Dubai C+D

Abstract no.: 33016

**DISTAL TIBIAL GROWTH ARREST FOLLOWING MENINGOCOCCAL
SEPTICAEMIA; MANAGEMENT AND OUTCOME IN A SERIES OF SEVEN
ANKLES**

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Survivors of infantile meningococcal septicaemia often develop progressive skeletal deformity as a consequence of physeal damage at multiple sites, particularly in the lower limb. Distal tibial physeal arrest typically occurs with sparing of the distal fibular physis leading to a rapidly progressive varus deformity. Isolated case reports include this deformity, but to our knowledge there is no previous literature that specifically reports the development of this deformity and potential treatment options. We report our experience of 6 patients (7ankles) with this deformity, managed with corrective osteotomy using a programmable circular fixator.