

Date: 2014-11-19

Session: Knee: Short Oral Presentations - Knee Replacement

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 38318

LATERAL PARAPATELLAR APPROACH WITH FAT PAD FLAP FOR TKA IN VALGUS DEFORMITY WITHOUT LATERAL RETINACULAR CORONAL Z-PLASTY

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Background: The lateral parapatellar approach for TKA with valgus deformity has the advantages of direct approach to retracted lateral structures, preservation of the medial patellar retinaculum and better patellar tracking. Non closeable defect at the distal end of the lateral incision is often a problem at the end of the procedure. Hypothesis: The use of meniscal fat pad flap without doing Z-plasty of the lateral retinaculum for closure of the defect will achieve satisfactory results for TKA with valgus deformity. Patients and methods: a prospective study was conducted involving 20 patients with 24 knees who underwent primary knee arthroplasty with preoperative anatomic valgus angulation of 10 degrees or greater. The study included 4 males and 16 females with a mean follow up of 24.3 months. The average pre-operative anatomic valgus angle was 25.6 (range from 10 to 40). The lateral parapatellar approach with fat pad flap for closure of the resultant lateral defect with Z plasty coronal lengthening of the retinaculum was used in all cases. Results: At last follow up, the average knee society score (KSS) was 85.2 compared with average preoperative KSS of 26.66. Twenty knees (83.33%) achieved absolute medial stability. The average post operative tibio-femoral valgus angle was 5.2 degrees compared with average pre-operative tibio-femoral valgus angle of 25.6. Conclusion: The modified lateral approach provides adequate knee exposure, proper lateral release, satisfactory functional results and balanced patella-femoral tracking.

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Abstract no.: 37872

COMPRESSIVE BANDAGING VS NON-COMPRESSIVE BANDAGING FOR POSTOPERATIVE TOTAL KNEE ARTHROPLASTY PATIENTS: A PROSPECTIVE, RANDOMIZED TRIAL

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Objective: To determine the effect of non-compressive postoperative bandaging on pain, range of motion, postoperative bleeding, time to ambulate and length of hospital stay compared to conventional compressive bandaging for patients who undergo primary total knee arthroplasty. Study Design: Prospective, randomized trial. Methods: Twenty-two patients undergoing primary total knee arthroplasty by the senior author between May 2013 and October 2013 were randomly allocated to postoperative compressive bandaging or non-compressive bandaging. Outcome measures were subjective pain measurement through visual analogue scale (VAS) and knee range of motion at postoperative days 1, 2, 4, 7, and 14. Bleeding on postoperative day 1, time to ambulate, and length of hospital stay were also recorded for comparison. Results: The demographic data showed no significant difference between the two groups. There was a moderately significant shorter time to ambulate among patients with non-compressive bandaging than those patients with compressive bandaging (2.00 days vs 2.64, $p=0.0531$). Between the two interventions, compressive bandaging was more consistent in minimizing bleeding compared with non-compressive bandaging (91% vs 82%, $p=0.476$). Overall, there were no significant differences between the groups in terms of postoperative range of motion ($p>0.05$) and subjective pain measurement (p -values more than 0.05). Conclusion: The use of non-compressive postoperative bandaging did not differ from compressive bandaging in terms of pain, range of motion, postoperative bleeding, and hospital stay. The use of non-compressive bandaging was related to slightly shorter time to ambulation.

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Abstract no.: 36784

LOWER BACTERIAL LOAD WITH PROPHYLACTIC REGIONAL INTRAOSSEOUS ANTIBIOTICS IN MURINE MODEL OF TKA

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Abstract: Deep infection rates following total knee arthroplasty persist between 1-2.6%. As antibiotic resistance increases, there is concern that current prophylactic antibiotic regimens may no longer provide effective prophylaxis. Intraosseous regional administration of prophylactic antibiotics after tourniquet inflation (IORA) in TKA has been shown in human studies to achieve higher tissue concentrations of antibiotic. Questions/Purpose: To compare the effect of IORA of prophylactic antibiotics with that of systemic antibiotic administration on bacterial load using a murine model of total knee arthroplasty. Methods: Mice were randomised into six groups: control (no antibiotic treatment), systemic cephazolin, IORA cephazolin, standard-dose systemic vancomycin, low-dose systemic vancomycin and low-dose IORA vancomycin. Surgical procedures were carried out creating a murine model of TKA and 2microlitres 1×10^9 of bioluminescent *S. aureus* was pipetted into the knee joint. Biophotonic imaging was used to compare in vivo bacterial loads on a daily basis. After four days the mice were culled to enumerate the bacterial loads associated with the knee joint via culture based techniques. Results: Animals administered IORA cephazolin, standard-dose systemic vancomycin and low-dose IORA vancomycin demonstrated significantly lower levels of bioluminescent bacteria. Likewise bacterial CFUs obtained from the implant were significantly lower in the IORA cephazolin, standard-dose systemic vancomycin and low-dose IORA vancomycin groups. Mice treated with IORA cephazolin or vancomycin had significantly lower numbers of bacteria recovered from the tissues surrounding the implant site. Conclusions: IORA of prophylactic antibiotic is more effective than the same systemic dose. Low-dose IORA is more effective than standard-dose systemic vancomycin.

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Abstract no.: 38117

REVISION TOTAL KNEE ARTHROPLASTY: RECONSTRUCTION WITH BONE ALLOGRAFT

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Introduction: in revision total knee arthroplasty (TKA) usually bone defect is present, due to many reasons. Among some options to restore bone stock, allograft has been used in some centers. Objective: to evaluate outcomes of human bone transplant as a treatment of bone defects in revision TKA. Materials and Methods: from October 1987 to March 2004, 86 revision TKA were performed at our institution. Bone allograft was employed in 36 knees. Eleven knees in ten patients were excluded. All complications were recorded. Demographics: Thirteen female, nine male patients, average age 7.5 years (24.4 to 83.3). Average follow-up data 114 months (60-183). Bone allograft was morcelized in eight and structural in 29 knees, three in femurs, eight in tibias and fourteen in both. Results: eleven reoperations, four of them we considered allograft failure (16%). In fourteen non-revised knees, clinical results (KSS) improved from 41 (range, 3-74) to 87 (range, 67-100), with 9.5 years of follow-up. Radiographic evaluation showed allograft-host bone healing in 18 of 19 available knees and in one demarcation was still visible; in one signs of aseptic loosening, but reoperation was refused; in two some allograft reabsorption, in asymptomatic patients. No infections to date. Conclusion: good results can be anticipated at medium follow-up with bone allograft in revision TKA. Allograft fracture was the main cause of failure. Care must be taken to avoid this complication.

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Abstract no.: 38076

COMPLICATIONS OF CORRECTIVE OSTEOTOMIES

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Introduction: Corrective osteotomies of posttraumatic and congenital deformities usually pursue a reconstructive and joint-preserving intent. Operative treatment and operative technique should be indicated individually depending on the specific surgical risks. This was our motivation to analyze the peri- and intraoperative risks of osteotomies at the lower limb. Methods: 1000 not selected, chronologically and retrospectively determined osteotomies of femur and tibia from 1995 to 2013 were analyzed. At 1000 patients (435 female, 565 male, mean age 39.9) 312 femoral and 688 tibial osteotomies were conducted. The osteotomies were performed with oscillating saw (n=694), Gigli-saw (n=42) or by trepanation (drilling/chisel osteoclasia) (n=264). 868 deformities were corrected acute and 132 continuously. Results: 16 Patients suffered of complications that needed to be revised (4 arterial injuries (3 by oscillating saw, 1 by drill tip), 2 secondary bleedings, 3 compartment syndromes and 7 deep wound infections). Consequentially 2 partial muscular deficits and 3 persisting sensible deficits resulted. Further complications could be treated conservatively (3 deep vein thromboses, 13 superficial wound infections). No osteitis appeared. No pulmonary embolism or death occurred. Discussion: The analysis of 1000 osteotomies shows a low number of perioperative complications. To keep the incidence of complications low, a detailed preoperative planning and high operative standards are essential. Especially vascular injuries (0.4%) need an emergency based intervention and vascular surgery competence. Special attention concerning adequate saw blades and drills is required. Keywords: osteotomy, deformity, perioperative complications, vascular injury, infection

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Abstract no.: 37047

A TRIAL COMPARING TWO PATIENT SPECIFIC INSTRUMENTATIONS IN TOTAL KNEE ARTHROPLASTY

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Introduction: Surgeons may use patient specific (PS) instrumentations/templates to achieve accurate bone cuts in total knee arthroplasty (TKA). We compare the tourniquet time, operative times, postoperative lower limb alignments and individual components' positioning in two different PS designs. Materials and Methods: 60 knees in 55 patients (38 women, 17 men) were recruited. 30 TKAs were performed using MRI-based Patient Specific Instrument (PSI) system and 30 using CT-based TruMatch (TMT) system. There was no difference in terms of the age, pre-operative deformity and diagnoses between the 2 groups. But the three were more male patients in the PSI group ($p=0.01$). Post-operative standing long films of the entire lower limbs were taken. Results: The mean tourniquet time was 49.1 ± 15.3 minutes for PSI and 42.9 ± 9.6 minutes for TMT groups ($p=0.07$). The mean operative time was 73.7 ± 16.0 minutes for PSI and 69.8 ± 17.9 minutes for TMT groups ($p=0.38$). TMT groups had significantly more outliers in tibial posterior slope ($p=0.025$). There was no difference in the number of outliers in other parameters including femoral component varus, femoral component flexion, tibial component varus and lower limb mechanical axis alignment between PSI and TMT groups. Discussion: PS instrumentation is a new technique in TKA. The PSI system and TMT systems had comparable results in the surgical times and component positioning. The PSI system may have advantages in providing more accurate tibial component posterior slope.

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Abstract no.: 37945

LONG TERM SURVIVAL OF ALL-POLYETHYLENE COMPARED WITH METAL-BACKED TIBIAE IN CEMENTED TKA

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All-polyethylene tibias are under-utilized now a day in most western countries. The quite unsubstantiated impression that the metal backed components are more versatile leads many surgeons to opt for the latter option. Only a few total knee prostheses allow direct comparison between all-polyethylene tibia components and metal backed ones. This problem stems from the different geometric design of many systems. The Depuy PFC Sigma prostheses have the advantage of having a similar geometric design of both the metal backed and the all-polyethylene tibias, and both types articulate with the same femoral component. Thus, it is possible to assess the results of all-polyethylene tibias and compare them directly with metal backed components. Reported below are the 10- to 11-year follow-up of a series of patients comparing either a modern congruent all-polyethylene tibial component with a modular metal-backed tibial component of the same design. The mean age of the patients was -- years, all were diagnosed with osteoarthritis. Of 55 consecutive patients followed, 2 patients died, 3 had revision surgery, and none were lost to follow-up. The remaining 50 patients (22 all-polyethylene/28 metal-backed) were clinically and radiographically assessed. There were no differences in knee function (KSS score, range of motion, stability) or radiographic parameters between the groups. Of the 3 revisions, only 1 was performed for aseptic loosening (2 revision were of metal-backed prostheses). Ten-year survivorship of the all-polyethylene tibial component was 92 % with revision for any reason. Function of both designs appear similar, the all-polyethylene design is cheaper.

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LATERAL APPROACH IN PRIMARY TKR

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Introduction: In valgus deformity of the knee with angulation more than 10 ° there is a stretch of medial soft tissue structures (primarily MCL) and moderate or severe hypoplasia of the lateral condyle. In addition, there is a certain degree of lateralization of the patella, external rotation of the tibia, and internal rotation of the femur. Objectives: To present the advantages of the lateral approach in TKR due to degenerative knee osteoarthritis associated with knee valgus angulation more than 10°, and with patellar dislocation or subluxation. Methods: The work included 32 patients (26 women, 6 men) who underwent surgery in IOPMR "Dr M.Zotovic" in May 2008 - July 2012. Surgical technique involved a lateral approach to the knee joint, which will be described in detail. Patients received standard antibiotic and thromboembolic prophylaxis, and they were included in the program of early rehabilitation with full bearing allowed on the operated leg first postoperative day. All patients were followed radiologically and functionally (HHS, Womac index). Results: The approach itself performs a release and balance and this improves the stability and patellar tracking. In all patients we achieved the restitution of the lower extremity axis. We have not noted avascular necrosis of the patella, which is described in the literature as the most common complication with this approach. Conclusions: The lateral approach because of its advantages is the technique of choice in TKR in gonarthrosis with valgus angulation of the knee of more than 10 degrees.

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Abstract no.: 37930

PRIMARY TOTAL KNEE ARTHROPLASTY IN THE INDIAN RURAL POPULATION: GOOD OUTCOMES AT MID TERM FOLLOW UP

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INTRODUCTION: Total knee arthroplasty is a commonly performed procedure that can be safely and effectively be performed in rural hospitals with acceptable outcomes **METHODS:** We evaluated the clinical and functional outcomes of primary knee replacements of 100 knees performed in a rural hospital between the period of 2009 to 2012 with a minimal follow up of two years. Indications for surgery included primary knee unilateral/bilateral osteoarthritis with patients with post traumatic arthritis and neurological problems being excluded. **RESULTS:** The patients WOMAC and Knee Society scores improved, and the use of mobility aids decreased. No loosening of implants was observed. None of the patients developed a deep wound infection **CONCLUSION:** In a rural setting, total knee replacement can be safely and successfully performed to the benefit of rural patients, surgeons and GP's

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COMPARISON BETWEEN INTRAOPERATIVE AND POSTOPERATIVE KINEMATICS IN CRUCIATE-RETAINING TOTAL KNEE ARTHROPLASTY USING NAVIGATION SYSTEM AND 2D/3D REGISTRATION TECHNIQUE

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Introduction: Recently, there are increasing literatures of the in vivo kinematics of total knee arthroplasty (TKA). However, the correlation of the kinematics of TKA intra-operatively and postoperatively has not been revealed. Purpose: The purpose of this study is to evaluate the correlation of the kinematics of cruciate-retaining TKA intra-operatively and postoperatively. Materials and Methods: We investigated 6 knees (1 male and 4 females, mean age 74.5 years-old) implanted with cruciate-retaining TKA caused by osteoarthritis. The intra-operative kinematics was obtained by the operator bending the knee after the placement of all components using navigation system. The postoperative kinematics was obtained by fluoroscopic images in weight-bearing squatting and using the 2D/3D registration technique. Results: The kinematics rotated from externally 6.8° to internally -1.6° intra-operatively and rotated from externally 4.4° to internally 1.0° . In the regard of the transition of average variates, the intra-operative axial rotation was internal tendency from 10° to 50° of flexion, subsequently slight external tendency from 50° to 110° , and more external tendency from 110° to 130° . The postoperative axial rotation was internal tendency from 0° to 30° , subsequently slight external from 30° to 70° , and more external tendency from 70° to 90° . Conclusion: It is likely that the in vivo intra-operative kinematics, axial rotational transition, of the cruciate-retaining TKA correlate to the postoperative kinematics in squatting motion.

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RETENTION VS. SACRIFICE OF THE POSTERIOR CRUCIATE LIGAMENT IN TOTAL KNEE REPLACEMENT. A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background. To retain or to sacrifice the posterior cruciate ligament (PCL) in total knee arthroplasty (TKA) remains a matter of discussion. This systematic review aimed to find differences in functional and clinical outcome between PCL-retention and sacrifice. Methods. A systematic literature review was conducted aimed at including RCT's and quasi RCT's comparing PCL-retention with sacrifice with a minimal 1-year follow-up. Primary outcome was range of motion. Secondary outcomes were knee pain and, preferably validated, clinical scoring systems. Quality of evidence was graded using the GRADE-approach. All outcomes available for data-pooling were used for meta-analysis. Results. Twenty studies (1.877 patients, 2.347 knees) were included. In meta-analysis the flexion angle had a mean difference of 2.1 degrees (95%-CI 0.23, 3.98, p=0.03) and the KSS functional score was 2.4 points (95%-CI -4.30; -0.41, p=0.02) in favour of PCL sacrifice. These were the only homogeneous and statistically significant differences. Meta-analyses on the outcomes: WOMAC, KSS pain, clinical and overall score, HSS score, SF-12, radiolucencies, femoro-tibial angle, and tibial slope showed no significant differences and were comparable in terms of statistical homogeneity. Quality of the studies was highly variable ranging with moderate to high risk of bias. Interpretation. There are no clinically relevant differences between PCL-retention and sacrifice in terms of functional and clinical outcomes. Quality of the studies ranged from moderate to low. Based on the current evidence no recommendation can be made whether to retain- or to sacrifice the PCL.

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Abstract no.: 37048

A RANDOMIZED CONTROLLED TRIAL COMPARING TRUMATCH INSTRUMENT AND CONVENTIONAL INSTRUMENT IN TOTAL KNEE ARTHROPLASTY

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Background: Surgeons may use TruMatch instrumentations (TMT) or conventional instrumentation (CON) to achieve accurate bone cuts in total knee arthroplasty (TKA). We performed a randomized controlled trial to compare their tourniquet times, operative times, postoperative lower limb alignments and individual components' positions. Patients and Methods: 60 knees in 51 patients (45 women, 6 men) were recruited. 30 TKAs were performed using TMT system and 30 TKAs using CON system. There was no difference in terms of the age, pre-operative deformity and diagnoses between the 2 groups. Results: The tourniquet times were 42.6 ± 14.7 minutes for CON group and 42.9 ± 9.6 minutes for TMT group ($p = 0.92$). The operation times were 68.4 ± 16.3 minutes for CON group and 69.8 ± 17.9 minutes for TMT group ($p = 0.75$). There was no difference in the number of outliers in post-operative lower limb mechanical axis alignment and component positions except in femoral component flexion, where CON group had significantly more outliers than TMT group. Conclusion: Patient specific instrumentation (TMT) is a new technique in TKA. The post-operative lower limb alignment and individual component positioning were similar in most measurements except for femoral component flexion in the sagittal plane, in which the TMT instruments resulted in significantly less outliers. The overall accuracy of the TMT instruments is still undetermined as the incidence of outliers was high.

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Abstract no.: 37004

TRIPLE ATTACK PROTOCOL IN MEDIAL LIGAMENT INJURIES IN PRIMARY TOTAL KNEE REPLACEMENT

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Introduction: Medial collateral ligament injury in primary total knee replacement is considered a devastating condition that may end in failure of the procedure and necessitates the shift to a more constrained prosthesis. The sequelae of such a condition requires meticulous attention for diagnosis and management. Up till now there was no proposed protocol for avoiding and dealing with such a complication. Methods: A retrospective analysis was done for 450 primary total knee replacements that were done during the period between January 2006 till January 2010 in 410 patients with arthritic knees (410 osteoarthritic and 40 rheumatoid patients with 400 having a varus knees and 50 valgus knees). Patients with valgus knees > 10 degrees, known previous traumatic ligament injury were excluded from the study. Four knees had recognized intra-operative ligament injuries and one knee postoperatively the remaining served as controls. A triple protocol was adopted for these patients (ligament reefing with repair, medial sole wedge and hinged knee brace). Results: None of the knees required further surgical intervention during the follow up to 3 years with neither clinical nor radiological signs of instability. Data from the study was analyzed giving a clue that body mass index > 35, rheumatoid arthritis and varus deformity > 15 degree were predisposing factors. Conclusion: Triple attack protocol is effective in prophylaxis and in management of medial collateral ligament injuries occurring in primary total knee replacement, authors propose that a new scoring system should be applied for patients at risk of such a condition.

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Abstract no.: 36991

THE MANAGEMENT OF MODERATE AND SEVERE FIXED FLEXION CONTRACTURE DURING TOTAL KNEE ARTHROPLASTY AND THE NATURAL HISTORY OF RESIDUAL DEFORMITY AFTER THE SURGERY

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Fixed Flexion Contracture(FFC) is a common deformity found in patients undergoing Total Knee Arthroplasty (TKA). Although mild deformities (0 to 15 degrees) are common, moderate (16 to 30 degrees), severe (31 to 60 degrees) and extreme (61 to 120 degrees) are relatively rare. In the last decade, TKA as a procedure has gained momentum in developing countries like India, where the patient population still has severe forms of pathology developing before treatment is available to them. Published literature on the subject, which until recent times has been available from the western experience, has little data on the severe forms of this deformity. The authors have done a retrospective analysis of 230 knees with pre-operative FFC in patients with Osteoarthritis (OA) and Rheumatoid Arthritis (RA). Of these, 175 knees (OA-118, RA-57) had mild deformity, 35 knees (OA-17,RA-18) had moderate deformity, 12 knees had severe deformity (OA-4, RA-8) and 8 knees had extreme deformity (all RA). The study included the moderate, severe and extreme group of knees. The results were analysed for the correction achieved, the residual deformity on table (if any), the surgical steps employed for correction of the deformity and the final result at the end of 1 year of follow up of the cases where there had been a residual deformity on table. The authors offer their findings as indicative guidelines for surgical technique as well as a suggestion for accepting residual deformity and post surgical steps and final result in the severe and extreme group of these patients.

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Abstract no.: 37804

NAVIGATED TOTAL KNEE REPLACEMENT IN DIFFICULT CASES

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Introduction: only 80-82% of patients, who received TKR are satisfied. According Registres of Scandinavian countries about 3% replacements are unstable in first 2 years. To improve the results after TKR the navigation systems (NS) were worked out. Summary of publications about NS are: maximum deviation from angles is 3%, in severe deformity >20 degrees NS allow to put implants more correctly, with NS about 92% TKR have a correct position, but in standard TKR only 68%. Materials and methods: we performed 650 navigated TKR in 524 patients. We defined 2 gropes of patients: I – with severe deformities 84 patients operated with NS, II – with the same deformities 76 patients operated with standard method. We worked out special device for partial resection of proximal tibia in cases we need tibial blocks. This device can hold resection guide properly and cuts are very correct and tibial component lay accurately on it's place. Results: in I grope correct component's position was in 94%, deviations > 3 degrees were mostly in valgus grope. In II grope only 74% had a good position, deviations > 3 degrees were mostly in valgus grope too. Using of tibial additional blocks was almost equal in valgus patients in two gropes, but in varus patients was a grate difference, because NS can evaluate future cut carefully in mm. Summary: NS performs TKR with high accuracy in 94%, decrees tibial blocks in severe deformity almost in 50%, special cutting guide holder can increase accuracy in preparing proximal tibial.

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CHALLENGES AND EXPERIENCES IN ARTHROPLASTY FOR HAEMOPHILIC ARTHROPATHY

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Haemophilia is a family of clotting factor deficiencies which increase bleeding potential in susceptible individuals. The success of factor transfusion in treating the condition has led to the evolution of new pathological phenomena associated with the disease. The most common and most debilitating is haemophilic arthropathy (HA). **METHODS AND RESULTS:** A systematic literature search of Embase and Medline were conducted in order to identify the pathophysiology of haemophilic arthropathy. 33 papers were identified from which two inter-dependent mechanisms were identified: degenerative and inflammatory pathways. There is a self-propagating cycle of bleeding-inflammation-bleeding set up in affected 'target' joints. Direct chondrocyte toxicity is mediated by pro-inflammatory cytokines while haem alters gene regulation to allow a brittle inflammatory synovitis which furthers the bleeding potential. **SURGICAL CONSIDERATIONS:** As the regional centre for haemophilia management our surgical experience has evolved over the last ten years to overcome the extreme challenges of haemophilic arthroplasty. Protocols for the intra-operative management of factor-deficient bleeding are discussed. The effects of co-morbid hepatitis and HIV (frequent in this population due to previous transfusion) are discussed. Pre-operative/definitive radiosynovectomy and its benefits are described. The effect of the inflammatory disease on the surrounding peri-articular bone stock, and the techniques used to overcome poor quality metaphyses are discussed. **CONCLUSIONS:** Haemophilic arthropathy is a unique disease with inflammatory and degenerative features. It poses unique challenges to the surgeon who must treat young patients with severe bleeding risks, serious co-morbidities and poor quality bone.

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Abstract no.: 36412

STIFFNESS AFTER TKA, MORE COMMON IN YOUNGER PATIENTS?

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Introduction: Stiffness is a well known complication after total knee arthroplasty (TKA). The primary aim was to study the incidence of MUA after TKA and to investigate if age, diabetes mellitus and gender were predisposing factors for MUA. The secondary aim was to study the range of motion after treatment. Methods and materials: We reviewed all patients who underwent closed MUA during five years after TKR (2008-2013). The indications for MUA were knee extension $< 90^\circ$ or flexion contracture $> 10^\circ$. Results: 817 TKAs were performed and 42 patients underwent MUA during the period, the incidence was 4,8 %. 65% were females. Two of our patients had diabetes mellitus. 44 % of all patients operated with TKA were < 65 years of age and 86 % of all patients undergoing MUA < 65 years of age (chi-square test, $p < 0.001$). Time elapsed between TKA and first mobilization was in median 15 weeks. 41 of 42 patients were treated with physiotherapy after MUA and 38 used continuous passive motion device. One complication was noted in a patient who got an undislocated femur fracture. The net gain in ROM was about 27 degrees. Conclusion: The only predisposing factor for MUA was age. The majority of patients were younger than 65 years of age; the reason for this is unclear. Further studies are needed. However we could still recommend MUA as the first line of treatment in case of failure of physiotherapeutic treatment following knee arthroplasty.

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BIDIRECTIONAL BARBED SUTURES IN TOTAL JOINT ARTHROPLASTY: WHAT IS THE EVIDENCE? A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: Newer methods of wound closure such as bidirectional barbed sutures hold the potential to decrease closure time and thus overall operating room costs during TJA. Methods: A systematic review of the literature was performed. Studies that were either level I or II were included in a mixed-effects meta-analysis model which compared outcomes between barbed and standard sutures while the remaining (level III and lower) were included in a systematic review. The mean major and minor complication rate was determined as well as the amount of time saved and when possible the overall cost savings (or loss) associated with the suture. Results: Six level I studies were identified, however, only two were related to total joint arthroplasty. Evaluation of non-randomized trials resulted in a further two level III studies, one level IV study, and one biomechanical study. Results of the meta-analysis demonstrated that barbed sutures did not have a significantly higher odds for either a minor (OR: 1.01, 95% CI: 0.30 – 3.4) or major complications (OR: 1.29, 95% CI: 0.16 – 10.3). Wound closure time decreased a mean 10.5 ± 1.1 min. which corresponded to a total cost savings of $\$509.64 \pm 129.74$. Conclusion: Bidirectional barbed sutures are consistently associated with a shortened wound closure time in randomized controlled trials, which also corresponds to cost savings even when the higher cost of these sutures is accounted for. The odds of having either a minor and major complication was not significantly different.

Date: 2014-11-19

Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37667

COMPARISON OF THE PREDICTED FEMORAL AND TIBIAL CORONAL AND SAGITTAL PLANE ALIGNMENTS BY MRI BASED PATIENT SPECIFIC INSTRUMENTATION WITH INTRAOPERATIVE NAVIGATION DURING KNEE REPLACEMENT

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Introduction: The final alignment of Patient Specific Instrumentation (PSI) TKA would rely on the accuracy of the 3-D moulds, accurate placement of the moulds, precision of saw cuts, soft tissue balancing and cementing technique. Aim: To compare the patient specific 3-D mould predicted bone cuts (coronal and sagittal planes) with ASM navigation. Methods: Eight consecutive PSI TKA (Zimmer Inc) were performed with MRI based 3 D moulds. Conventional cutting jigs were placed over pins inserted through the 3-D moulds and were independently verified with ASM navigation. Results: There was very good correlation between PSI and navigation for tibial cuts (maximum variation: coronal plane - 1°, sagittal plane - 2°). There was also very good correlation for femoral cuts in the sagittal plane (maximum variation 2°). However, in two patients the coronal plane variation was > 2° (3° and 4° valgus respectively). Navigation predicted a combined final mechanical alignment of 5° valgus and 4° valgus in those two patients whereas PSI predicted 0° mechanical alignment. Final alignment was checked in those 2 patients with long leg standing x-rays. This showed the final radiographic alignment was 0° and 1° valgus correlating more closely with PSI prediction of 0° than with navigation. Conclusion: There was very good correlation between cuts predicted by PSI and navigation. Two cases had more than 2° variation in the femoral coronal plane. But long leg views showed PSI was more accurate in those two cases than navigation.

Date: 2014-11-19

Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38437

PAIN AND FUNCTIONAL OUTCOMES WITH TOURNIQUET USE IN TOTAL KNEE ARTHROPLASTY

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Introduction: Tourniquets have been used for many years during total knee arthroplasty as a means of achieving a bloodless field for better visualization and cement-bond inter-digitation. Controversy has surrounded the necessity for a tourniquet in past years. There are many advantages and disadvantages to using a tourniquet, and one prominent disadvantage is a purported increase in post-operative pain and limitations in range of motion. Objective: This study examined the literature for assessment of pain and analgesia usage in post-operative patient who have either received no tourniquet during surgery or received variations in both timing and pressure. Secondary outcomes included were functional in nature, namely range of motion and post-operative hospital stay. Methods: Three hundred and nineteen articles were searched and narrowed to 6 using the QUORUM approach. All were randomized, controlled trials with specific exclusion criteria. Results: When analyzing each trial, pain did not seem to be significantly lower in those with no tourniquet. Instead, patients who received lower pressures for only a portion of the surgery had lower pain levels. Range of motion was consistently higher in the non-tourniquet groups compared to the tourniquet patients in all studies that included this measure. There was no difference in hospital stay within the groups for each trial. Conclusion: Our conclusion is that this question is not as straightforward as originally perceived. Patients who receive tourniquet compression up until cementation at lower cuff pressures using a wider cuff may be at an advantage in their post-operatively outcomes.

Date: 2014-11-19

Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38448

**MID TERM RESULTS OF TIBIAL CONDYLE DEFECT MANAGEMENT
IN DIFFICULT PRIMARY TOTAL KNEE ARTHROPLASTY**

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Tibial condyle defects in primary total knee arthroplasty (TKA) are frequently encountered in India, especially in cases with severe deformities and the management of these can be quite challenging. We present our mid term results of our case series of 30 tibial condyle defects encountered in a difficult primary TKA setting. The defects were classified according to the Engh / AORI classification. Treatment options included the offset placement of prosthesis+ bone cementation of smaller defects, screw+ cementation techniques, Reconstruction with bone graft and screw, as well as the use of longstemmed prosthesis with wedges/ augments. Preoperative deformities were predominantly varus deformities in 90% cases. There was a significant increase in the operative time, blood loss, cost of surgery and duration of stay when compared to standard TKA cases. Operative complication included two fractures of the sclerotic tibial condyle, one of which required screw fixation. Skin necrosis was seen in two cases, one of which required gastrocnemius flap and skin grafting in view of preexisting operative scar and preoperative complete stiffness in full extension. One patient with a 90 degree preoperative knee contracture had a subluxation postoperatively which was treated with closed reduction and cast with satisfactory outcome. There was no infection, nerve palsy or any cases of loosening / revision surgery at 5 year follow up. Difficult primary TKA with tibial condyle defects although challenging, gave satisfactory outcomes at a mid term follow up.

Date: 2014-11-19

Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36877

**THE CEMENTED OXFORD UNICONDYLAR KNEE ARTHROPLASTY
- THE IMPACT OF FEMORAL COMPONENT ALIGNMENT ON
IMPLANT SURVIVAL**

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The mobile bearing design of the Oxford knee arthroplasty may be more forgiving for mal-alignment compared with other unicondylar arthroplasty designs. However there are no large studies that have analysed the association of implant alignment with a requirement for early revision surgery. We measured the component alignment of 26 patients treated with a cemented medial Oxford knee arthroplasty who required early revision surgery. The results were compared to those from a matched cohort of 52 patients, who did not require revision, according to age, gender and body mass index. No significant differences in pre-operative Oxford knee scores, Eq5D scores or pain visual analogue scores were identified between the groups. There was no significant association between the alignment of the tibial component and a requirement for revision surgery. However flexion of the femoral component, even within the recommended alignment limits, was associated with early revision ($p < 0.01$). Patients with a successful outcome also tended to have greater femoral component valgus alignment that often exceeded the recommended limits. This is the first study to review component alignment of the Oxford knee arthroplasty in a large cohort of patients requiring early revision and indicates that current implantation guidelines may not accurately reflect orientations that confer a successful outcome in vivo. Precautions should be taken to prevent flexion of the femoral component during surgery whilst preferentially erring towards a valgus alignment.

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Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36975

OUTCOME ASSESSMENT OF TRANSTIBIAL VS ANATOMICAL TUNNELING TECHNIQUES FOR ARTHROSCOPIC ACL RECONSTRUCTION

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Background: Transtibial tunneling technique has been the commonly used for arthroscopic ACL reconstruction for many years. Recently anatomic reconstruction using anteromedial portal have gained popularity citing advantages like both femoral and tibial tunnels are drilled independently of each other, preservation of any remaining intact ACL fibers, isolated reconstruction of the anteromedial or posteriolateral bundle etc. In this study we intend to compare outcome of ACL reconstruction using transtibial and anteromedial portal. Materials and methods:50 patients with ACL deficient knees underwent ACL reconstruction, 25 by transtibial and 25 by anatomical technique. In all surgeries Quadrupled hamstring graft (Semitendinosus and Gracilis) was used. Outcome was assessed clinically based on Lachman's and Slocum's tests and functional outcome using Lysholm knee score at 3,6 and 12 months follow up. Result: There was no significant difference in the Functional outcome (Lysholm Knee score), anteroposterior stability (Lachman's test) and rotational stability. Conclusion: Both groups have equally good stability in both the anteroposterior and rotational plane.all patients in both groups have good functional outcome.

Date: 2014-11-19

Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANĀ

Abstract no.: 37095

FLEXION CONTRACTURE AND DIGITAL TEMPLATING IN TOTAL KNEE REPLACEMENT

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Many factors contribute to the accuracy of knee implants' digital templating. Our aim was to check if flexion contracture affects the precision. A prospective study was run in the department of joint surgery from September 2013 to December 2013. Patients coming to the elective knee replacement were included. The flexion contracture was measured with a goniometer and digital templating was performed in knee AP, ML and long leg radiograms prior to the surgery. mediCAD Classic Version and 25-mm metallic ball were used for digital templating. 62 patients were included in this study, 12 of them male, 50 – female. Mean flexion contracture was 9 degrees, IR = 6-12, range = 0-22. The accuracy of the templating was defined as difference between real and templated implant size rank. All patients were divided in 2 groups depending on their flexion contracture value (0 till n degrees and above). Mann Whitney U test revealed a statistically significant difference between groups in measuring the femoral implant size in knee AP radiogram for n = 6, 7, 8 and 10 (p<0.05). Then patients were divided in 2 groups of flexion contracture 5 to 10 degrees and above. Mann Whitney U test revealed a statistically significant difference between these groups in measuring the femoral implant size in knee AP radiogram (p=0.006). These findings prove that flexion contracture affects the precision of knee digital templating in measuring femoral implant size in knee AP radiogram. Imprecise measurements could be in flexion contrature above 10 degrees.

Date: 2014-11-19

Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANĂ

Abstract no.: 37001

COMPLEX PRIMARY KNEE ARTHROPLASTY

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INTRODUCTION: During primary knee arthroplasty we are faced the cases that are particularly difficult. It asking for additional operating procedures and implants. **AIM:** To determine the number of the complex primary total knee arthroplasty, the reason so severe cases, possible complications and assess the outcome of treatment compared to standard primary knee arthroplasty. **MATERIAL AND METHODS:** In a period from 2008 to 2013, we performed 570 primary knee arthroplasties, 24 (4.2%) was difficult cases, 14 F and 10 M, age 22-83 (61,7). Predominantly it was the complications of failed osteosynthesis or knee dislocations at 9 (37.5%), severe varus or valgus deformity more than 20 degree at 10 (41,6%), one aseptic MFC necrosis, one knee arthrodesis, one stress fracture of the proximal tibia, one LTC cysts and one severe flexion deformity after JRA. At 15 (62.5%) knees we used bone grafting, stem augmentation at 9 (37, 5%), mostly CR and CS arthroplasty, one case hinge arthroplasty. Those 24 cases we followed according KSS and WOMAC score. **RESULTS:** Follow-up was 32, 1 (6-56) month. Rehabilitation period was prolonged because of severe cases. Full weight bearing at first 6 – 12 weeks. After this short period all knees survived, functional result was improved, KSS from 48 to 72, and WOMAC from 37 to 76. **CONCLUSION:** During primary knee arthroplasty in a relatively small number we can expect increased intraoperative difficulties. It needs to recognize that on time. It is necessary preoperative planning, proper surgical instruments, and particularly a wide range of implants.

Date: 2014-11-19

Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37256

TOTAL KNEE ARTHROPLASTY IN SEVERE VARUS DEFORMITY

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Introduction: Angular deformities are relatively common findings in cases of advanced arthritis. Medial tibial bone defects are frequently found at the time of total knee arthroplasty (TKA) in severely varus deformity. Various techniques are available to compensate for bone defects in primary TKA such as cement filling, autologous bone graft, allograft, wedges or augments. Tibial component downsizing is another option to

Objectives: We report the results of downsizing technique in patients with severe varus deformity at the time of primary total knee arthroplasty.

Methods: This is a case-control study that includes all patients who are undergone TKA between January 2010 and January 2013. The study group were patients with severe varus deformity in whom medial tibial defect has been managed by tibial downsizing. We then match them one to one to other TKA patients based on sex, age and medical comorbidities. All the patients then were evaluated clinically and radiographically using WOMAC, KSS and SF-36 scores preoperatively and postoperatively at 6, 12 and 24 months.

Results: The average follow up was 19 months. We found significant improvement in the results of WOMAC score, KSS score & SF-36 score in both groups, however, we could not any difference between two groups in terms of final score or the amount of improvement.

Conclusions: Downsizing technique is still a viable, reliable and inexpensive method to address the severe medial bone defect in patients with severe varus deformity.

Date: 2014-11-19

Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36878

IMPACT OF PERIOPERATIVE OPTIMIZATION OF FLUID STATUS BY MINI VOLUME LOADING TEST (MVLT) ON OUTCOMES AFTER MAJOR JOINT ARTHROPLASTY: A RANDOMIZED DOUBLE BLINDED CLINICAL TRIAL

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Introduction: Individualized optimization of fluid status by goal directed therapy (GDT) improves outcomes after major surgery. The mini volume loading test (mVLT) is a modification of conventional GDT. It implies evaluation of hemodynamic and plasma dilution responsiveness aiming to avoid edema during stepwise infusion. Objective(s): The aim was to investigate if perioperative mVLT can improve outcomes after total knee arthroplasty (TKA). Methods: Forty seven patients (40 females, 7 males; n=47) completed the study. They were randomized into an intervention (I, n=21) and a control (C, n=26) group, respectively. For the I group the mVLT was applied twice - immediately before TKA and 24 hours later. Each patient received a series of mini fluid challenges of a crystalloid. When the infused fluid did not any longer enhance plasma dilution efficacy, this was an indication to stop the stepwise infusion. Fluid administration during the 24 hours between mVLTs was at the discretion of the attending physician. The primary endpoint was fit-to-discharge time. Secondary endpoints were functional recovery (TUG test) and switching to pain control with NSAID during six postoperative days. Results: In the I group the fitness-to-discharge and switching to NSAID occurred earlier, and functional recovery was better compared to the C group (log-rank test; p=0.007, p=0.008 and p=0.040, respectively). Conclusion: Perioperative mVLT was associated with better outcomes after TKA surgery. Acknowledgement: Funded by the European Social Fund under the Global Grant measure.

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Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

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Abstract no.: 36517

TRANSFEMORAL AMPUTATION FOLLOWING INFECTION OF TOTAL KNEE ARTHROPLASTY BY MRSA - ANALYSIS OF COSTS

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Introduction: observing a decreasing number of transfemoral amputations following infection of Total Knee Arthroplasty (TKA) I studied a patient which suffered a transfemoral amputation following infection by MRSA. Objective: This study expose a drama of a person which received a total knee arthroplasty in the right knee at 66.0 years. 2 weeks after the implantation of TKA she presented a wound secretion, microbiology: MRSA, Pseudomonas aer., Streptococcus. 4 surgical revisions followed without removing the TKA. 35 month later, with 68.9 years it was indispensable to remove the TKA in a 6th operation, implanting a spacer with Vancomycine. 1 month later removing of the spacer and implanting a second cemented TKA in the 7th surgery. With 70.2 years removal of the second TKA was necessary because of infection with Pseudomonas aer. and Morganelli moganii. At the same time Implantation of another spacer with Vancomycine. 1 month later with 70.3 years removal of the spacer molding an arthrodesis of the right knee using an intramedullary femur to tibia rod. After that 4 revision surgeries with changing two times the intramedullary rod some wound revisions followed, ending in the 23rd operation with a transfemoral amputation with 71.1 years. 3 month after transfemoral amputation the patient presented an infection of the TT-stump; microbiology: MRSA. 2 more surgeries are necessary to stop the infection. Conclusion: this patient suffered 25 surgical procedures in 5.5 years; hospitalization 431 days in 33 month; statement of charges from the hospitals € 74.046,92; payment by the insurance € 155.424,00.

Date: 2014-11-19

Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36516

TRANSFEMORAL AMPUTATION CAUSED BY AN INFECTION OF TOTAL KNEE ARTHROPLASTY

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Introduction: because we see a decreasing number of transfemoral amputations following infection of Total Knee Arthroplasty (TKA) we performed a retrospective case control study of all rehabilitated amputees in the centre of rehabilitation for amputees in Bad Berleburg, Germany. Objectives: This study examines all patients who had undertaken a transfemoral amputation after infection with MRG after TKA since 2007. Methods: retrospective case control study. Results: 9 patients – 2,53% of all TT-amputations suffered a loss of the lower extremity caused by an infection of TKA by MRGs. 3 patients presented an infection only by MRSA (multiresistant Staph. aureus 33,33%), 2 patients only with MSSA (multisensible Staph. aureus); other 4 patients presented mixed infections with MRSE (multiresistent Staph. epidermidis), multiresistent Acinetbacter baumannii, E. coli, Enterococcus faecalis, Pseudomonas aeruginosa. Epidemiology: The mean age of the amputees was 70,07 years, with 4 men and 5 women. Marital status: 6 patients are married (66,66%), 1 divorced, 1 widowed, 1 unmarried. All patients are retired. School-leaving qualifications: 7 elementary school (60,87%), 1 secondary school, 0 high school (Gymnasium), 1 unknown. The medial time of hospitalization 29,22 days. Mobility class of amputees at the beginning and at the of hospitalization and the BARTHEL ADL index will be discussed. Conclusion: This retrospective case control study shows for the first time that amputation of the lower extremity following infection in TKA is with 2.53% still rare - but we notice in our clinic a decreasing number.

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Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36560

FACTORS DETERMINING THE DECISION OF ORTHOPEDIC SURGEONS TO PERFORM TOTAL KNEE REPLACEMENT. RESULTS OF A RANDOMISED STUDY

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Objective. The decision to perform a total knee replacement (TKR) is not well defined resulting in variation of indications among orthopaedic surgeons. Aim of this study was to analyse the factors influencing the decision to perform a TKR by orthopaedic surgeons in The Netherlands. **Methods.** A questionnaire was sent to 599 Dutch orthopaedic surgeons. We used three case vignettes, each case divided in two versions. The case vignettes were identical except for information about either age or pain or radiological osteoarthritis (OA). Respondents were randomised into two groups and allocated to one of the two versions. Respondents were asked if a TKR would be the next step in their treatment. **Results.** 54.4% of the orthopaedic surgeons completed the questionnaire (N=326). Orthopaedic surgeons tended to perform a TKR significantly more often at higher chronological age (73.3% vs. 45.5%, $p<0.001$). No significant differences were observed on the decision to perform a TKR dependent on mild and severe pain (57.0% vs. 64.0%, $p=0.196$). Orthopaedic surgeons were significantly less likely to perform surgery in a patient with mild radiological OA (9.7% vs. 96.9%, $p<0.001$). **Discussion.** Old age and severe radiological OA are factors resulting in the decision to perform a TKR. Symptoms of moderate or severe pain are unequivocal when considering a TKR. Interestingly this is not in line with current view where radiological OA moderately correlates with clinical OA and where pain is an important clinical factor.

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Session: Knee: Short Oral Presentations Knee

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38439

10 YEAR RESULTS OF THE P.F.C SIGMA TM - ROTATING PLATFORM CRUCIATE RETAINING TOTAL KNEE REPLACEMENT

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Background: Mobile-bearing Total Knee Replacement allow unconstrained axial rotation. Increased articular conformity minimizes polyethylene contact stresses, thereby reducing linear wear and fatigue failure. Method: We prospectively reviewed a consecutive series of 113 patients with mobile bearing total knee replacements using the PFC Sigma Cruciate Retaining Rotating Platform System. (DePuy, Leeds, United Kingdom) with 10 year follow up (minimum 10 and maximum 12 years, mean 11.1 years). 113 patients from 2001 to 2003 were followed up till date. Primary osteoarthritis 98%; was the main indication followed by rheumatoid arthritis (1 case) and psoriatic arthritis (1 case). 58% were females with mean age of 69.5years. Modified Oxford knee scores were measured preoperatively and at last follow up. Result: Of 113 patients, 97 had minimum 10year follow up. 16 patients in our study had died of unrelated causes. Mean Revised Oxford Knee score improved from 16 (Range 5-24) pre operatively to 42 (Range 15 - 48) at last follow up. The mean range of movement improved from 91degrees preoperatively to 115 degrees at last follow up. One patient had dislocation of bearing needing manipulation .One patient had superficial infection treated with antibiotics .No patients had deep infection. There was 1 case reported of deep vein thrombosis and one of non-fatal pulmonary embolism. Non of the surviving 97 patients needed revision surgery at last follow up. Conclusion: The 10 year results in our series with PFC Sigma mobile bearing knee replacement are excellent with 100% survivorship and good outcome scores.

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Session: Infection: Short Oral Presentations Infection

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38223

VALIDATION OF SOLAGBERU'S CLASSIFICATION OF OSTEOMYELITIS FIRST DESCRIBED IN 2003

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Background: Developing countries have the largest cases of osteomyelitis which can arguably be described as a disease of poverty. The spectrum of osteomyelitis seen is different to some large extent from those seen in developed countries hence the need for a new classification which would capture this variety. Existing classification by Walvogel et al and Cierny and Mader did not capture developing country osteomyelitis. Solagberu in 2003 described another classification. Objectives: to validate the new classification of osteomyelitis. Methodology: Using the new classification in practice and comparing with established ones. Literature search for its application in scientific studies or publications. Results: 888 Osteomyelitic cases were reviewed and the classification was applied. Fifteen unindexed journals and Two PubMed scientific papers (one from Italy and another from China) and two text books (Paediatric Surgery in Africa and Paediatric osteoarticular infections) have cited the classification. Conclusions: The new classification appears valid and useful and should enjoy more common usage.

Date: 2014-11-19

Session: Infection: Short Oral Presentations Infection

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38002

ROLE OF LEUKOCYTE ESTERASE STRIP TEST IN DIAGNOSIS OF SEPTIC ARTHRITIS IN NATIVE JOINT

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Introduction: Septic Arthritis is a medical emergency with significant morbidity and mortality. Early diagnosis plays a significant role in limiting the morbidity and mortality of septic arthritis. Leukocyte Esterase strip test has been widely accepted for early diagnosis of periprosthetic joint infection. We conceived this study to evaluate the role of leukocyte esterase deep strip test in early diagnosis of septic arthritis in the native joints. Methods: This study was conducted on patients referring to our institution over a 2 year period (2011-2013). Aspiration fluids obtained from patients were then split in 3 containers, 2 of them sent to the laboratory to count WBC and the percentage of PMNs; and one for culture. The third container was used for leukocyte esterase strip test. Results: A total number of 114 patients were included. 46 patients were presenting with acute mono-arthritis, 58 patients considered as control and 10 patients with obvious pus. A sensitivity of 100% and specificity of 63.4% was found for leukocyte esterase strip test in diagnosis of joint infections. The negative predictive value is 100% and positive predictive value 83.5%. The accuracy of the test was found to be 86%. Conclusions: Taking into account the availability and reasonable price, and also the short time to diagnosis, this test could be a good alternative to culture for the diagnosis of septic arthritis. Considering the high negative predictive value, leukocyte esterase strip test is useful to rule out septic arthritis in suspected cases of joint infection.

Date: 2014-11-19

Session: Infection: Short Oral Presentations Infection

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37254

SEPTIC KNEE ARTHRITIS - ACCURACY AND PREDICTION OF LABORATORY PARAMETERS

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Introduction: Septic knee arthritis is one of the few orthopaedic emergencies. No clear evidence exists defining the presence of infection based on laboratory parameters. Routine investigations to rule out infection include white cell count (WCC); C-reactive proteins and knee aspirate cultures. Method and materials: Retrospective analysis of patients with query septic knee referred to our unit was performed. All knees with prosthesis in-situ were excluded from the study. Clinical signs and lab investigations including WCC and knee aspirate gram stain and culture were reviewed in all the patients. A positive culture in knee aspirate was considered as the standard for comparison. WCC of 11 or more was considered elevated. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of WCC and gram stain were calculated and compared with positive aspirate culture as the standard. Results: A total of 57 patients (36 males and 21 females) with an average age of 61.2 years were included in the study. Eleven of 57 aspirates had positive cultures (10 – Staphylococcus aureus & 1 E. coli). One sample was contaminated with Coagulase negative Staphylococcus aureus. For gram stain: sensitivity = 22.2%, specificity = 100%, PPV = 100%, NPV = 82.5%. For WCC: sensitivity = 45.5%, specificity = 55.8%, PPV = 20.8% and NPV = 80%. Conclusion: Both WCC and gram stain analysis show a significantly reduced sensitivity and a high specificity. The low PPV of WCC should be taken into account whilst deciding management on query septic knees.

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Session: Infection: Short Oral Presentations Infection

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36791

INDICATIONS AND RESULTS OF TC 99M_UBIQUICIDINE SCAN FOR DIAGNOSIS AND FOLLOW UP OF SUSPECTED OSTEOMYELITIS AND COMPARING WITH DIPHOSPHONATE TC99M_METHYLEN SCAN

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One of the complications in orthopaedic surgery is osteomyelitis and periprosthetic infection. Because of long term and chronic behavior of osteomyelitis, early diagnosis and also monitoring of treatment with special paraclinical tests is very important. In this study we tried to use TC99_Ubiquincidine scan for diagnosis and monitoring of treatment in suspected cases of osteomyelitis and periprosthetic infection and comparing with DiphosphonateTC99m_methylen scan. 52 patients suspected to have osteomyelitis and periprosthetic infection had been studied. All of the cases had signs and symptoms of osteomyelitis during first 3 months post operatively. In cultural assessment of the cases, 25 cases (48/1%) had positive culture and 27 cases (51/9%) had negative culture. UBI scan before treatment has been positive in 48 cases (92/3%) and negative in 4 cases (7/7%) with comparing the results with 3phasic scan which show positive in 39 cases (75%) and negative in 13 cases (25%). In this study ,UBI scanning showed that 6 weeks of treatment can significantly decrease of active bacteria count in the infectious areas and laboratory tests for CSR and ESR also UBI scan showed a significant reduce after 6 weeks of treatment. In second week, despite decrease in ESR and CRP level, UBI scan show no decrease and it means bacteria is present, so monitoring of infection is better to do with UBI than ESR and CRP.

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Session: Infection: Short Oral Presentations Infection

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38237

INFECTION RATES FOLLOWING ELECTIVE ORTHOPAEDIC SURGERIES IN MRSA CARRIERS

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DAKSHINAMURTHY

Royal Derby Hospital, Derby (UNITED KINGDOM)

Introduction: MRSA causes serious infection in orthopaedic patients mainly in presence of metal work. Our aim is to look at the infection rates in MRSA carriers who had elective orthopaedic surgery following decolonisation treatment. Methods: Retrospectively patients identified from MRSA database with positive nasal or groin screening swabs in preoperative assessment clinic. All treated with decolonisation treatment and had posttreatment negative screening swabs. Demographics, residence, risk factors for infection, surgical procedure, infection rates, treatment identified from patient notes. Results: 80 patients (M:F 38:42) identified with mean age of 60.1yrs (27-90), 46 (57.5%) had metal work and 34 had soft tissue procedures. Total 5 patients (6.25%) had infection with 5% (4) of superficial infection and 1.25% (1) of deep infection rates.

Date: 2014-11-19

Session: Infection: Short Oral Presentations Infection

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36422

BACTERIAL CONTAMINATION OF DIATHERMY TIPS USED DURING ORTHOPAEDIC PROCEDURES

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Introduction: The role of diathermy in orthopaedic surgical practice has increased since its introduction. No study to date has focused on the potential for diathermy tips to cause wound contamination. Methods: From July 2013 to September 2013, the diathermy tips from 86 consecutive orthopaedic procedures using diathermy were cultured using direct and enriched media. None of the diathermy tips were used for the skin incision. All patients underwent an orthopaedic procedure for a non-infected condition. For each procedure an unused control diathermy tip was placed on the instrument table at the beginning of the procedure and processed similarly. All patients were followed for any postoperative complications. Results: 108 diathermy tips from 86 orthopaedic procedures were cultured. None of the tips cultured directly on blood agar demonstrated bacterial growth. Following enrichment culture, 6 (5.6%) of the procedure diathermy tips and 1 (0.92%) of the control tips demonstrated bacterial growth. Coagulase-negative staphylococci (83.3%) and proprionibacterium (16.7%) were cultured from the tips. 1 of the patients who had bacterial growth from the diathermy tip developed a superficial surgical site infection. Conclusions: There may be benefit in changing the diathermy tips during orthopaedic procedures as they may represent a possible source of bacterial contamination.

Date: 2014-11-19

Session: Infection: Short Oral Presentations Infection

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38388

**AN OBSERVATION ON USE OF ANTIBIOTIC CEMENT
IMPREGNATED NAIL AND BEADS IN INFECTED NONUNION OF
LONG BONES**

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Introduction: Infected non union of long bones is a difficult problem to treat for an orthopaedic surgeon. Antibiotic cement impregnated intramedullary nails (ACIIN) and cement beads can be used to treat the infection at fracture site by delivering high concentration of antibiotics locally as well as providing stability to fracture. Aim: To evaluate the role of antibiotic cement impregnated intramedullary nail and cement beads in the management of infected nonunion of long bones. Methods: Patients with infected non union of long bones with implants in situ were included while non infected non union with open physis or infected nonunion with bone gap more than 4 cm. after debridement were excluded. Results: 20 patients, male (15) and female (5) were treated. In 17 patients complete eradication of infection occurred. Mean time for control of infection was 7.4 weeks. Mean time for radiological union was 24.6 weeks. Complication: joint stiffness (25%), cement-nail debonding and shortening (15%). Conclusion: With the use of antibiotic cement coated intramedullary nail and cement beads in infected non-union of long bones, the need of repeated debridement of fracture site and leaving the wound open after debridement can be avoided along with reducing the duration of treatment.

Date: 2014-11-19

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Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36415

USE OF DAPTOMYCIN SPACER IN THE MANAGEMENT OF COMMUNITY ACQUIRED VRSA SEPTIC HIP

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VRSA especially community acquired ones are an uncommon phenomenon. We report here a case of 56 year old female who presented with symptoms of pain in the left hip of 4 days duration. She was unable to ambulate and was having a fever of 100 F since the onset of pain. Clinically she had tenderness around hip, there were no other local signs of infection, but her range of movement at the hip was painful and restricted. A MRI revealed a large collection and features suggestive of septic arthritis of hip. An arthrotomy was done on an emergency basis and revealed a large collection which was sent for culture and sensitivity evaluation. On table, a decision to do an excision Arthroplasty was undertaken. Patient was subsequently put on a skeletal traction during postoperative period. Her C&S revealed a vancomycin resistant staphylococcus aureus infection. A decision to re-explore and insert a daptomycin spacer taken. A spacer was made on back table of the smallest size bipolar prosthesis with its head taken off and coated with heat resistant antibiotic Daptomycin. It was inserted in a standard fashion. The use of the antibiotic loaded spacer seemed to decrease the infection with drainage decreasing, counts returning to normal, CRP decreasing. . At subsequent 2 mth follow up patient was adjusting well to the excision Arthroplasty and ambulating with a significant trendelenburg lurch. The use of daptomycin impregnated cement spacer seem to be a good option for treating patens with VRSA infection.

Date: 2014-11-19

Session: Infection: Short Oral Presentations Infection

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36563

COST OF EXTERNAL FIXATION VERSUS EXTERNAL FIXATION THEN NAILING IN TREATMENT OF BONE INFECTION BY SEGMENT TRANSFER

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Introduction: Costs of medical care not only include hospital inpatient cost, it includes outpatient cost, and the cost of absence from work or school till full recovery. Medical community need to present the evidence of cost benefit of clinically effective procedures. Methods: Out of 71 patients with infected nonunion tibia treated between 2003 and 2006 50 patients fitted the inclusion criteria (26 patient external fixation only, and 24 external fixation early removal after segment transfer and replacement by internal fixation). Cost of inpatient treatment, total cost of inpatient and outpatient treatment till full healing, and the weeks of absence from school or work were calculated and compared between both groups. Results: Cases treated with early removal of external fixation and replacement by intramedullary nail showed statistically significant lower total medical care cost and lower duration of absence from work. On the other hand this group showed higher cost of hospital inpatient care. Conclusion: Early removal of external fixation and replacement by intramedullary nail in treatment of infected nonunion showed more cost effectiveness. Orthopaedic society need to show the cost effectiveness of different procedures to the community, insurance, and health authorities.

Date: 2014-11-19

Session: Infection: Short Oral Presentations Infection

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37063

PREVENTION OF PIN TRACT INFECTION WITH IODINE-SUPPORTED TITANIUM PIN

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Pin tract infection is one of the most common complications of external fixation. We developed techniques to coat titanium implant surfaces with iodine. This study clinically evaluated infection preventive effects and biological safety of iodine-coated external fixation pins. Iodine-supported pins were placed in 39 limbs of 38 patients. The mean age of the patients was 33.6 years. Twenty-six patients were men and 12 were women. External fixation was used for a mean duration of 6 months. There were 476 pin insertion sites. Pin sites were classified according to the Checketts-Otterburns classification (Grade1~6). Grade 1 infection was found in 2.5% of patients, and grade 2 infection in 1.1%. There was no patient with infection of grade 3 or higher. White blood cells (WBC) and C-reactive protein (CRP) were measured pre- and post-operatively in all patients. To confirm whether iodine from the implant affected physiological functions, thyroid hormone levels in the blood were examined. Median WBC levels were in the normal range and median CRP levels returned to <0.3 mg/dl within 3 weeks after surgery. Abnormalities of thyroid gland function were not detected. The change over time for the amount of iodine deposited in the body was calculated from the removed pins. The amount of iodine was maintained for a long time with approximately 40% remaining after 1 year. Iodine-supported titanium pins were able to decrease pin tract infection rate and had no impact on thyroid function. Iodine-coated titanium pins are biologically safe and excellent in prevention of pin tract infections.

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Room: MARACANÃ

Abstract no.: 37363

TREATMENT OF BONE DEFECTS IN POSTTRAUMATIC AND POSTOPERATIVE OSTEOMYELITIS PATIENTS BY THE MASQUELET TECHNIQUE

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Posttraumatic and postoperative osteomyelitis (PPO) with bacteria colonisation during trauma and associated surgery is an increasing clinical problem. Bone defects always occur after radical debridement in PPO patients. The management of large bone defects in PPO patients is a challenge. The induced membranes technique (Masquelet technique) were used to manage the bone defects in 12 PPO patients. The average deficit size was 6.8 cm in length. Infections were eradicated and bones were healed in 11 patients (91.6%), infection reoccurred in one patient which may be due to the incomplete debridement. The mean follow-up was 18 months. Thorough debridement is important for the control of bone infection. The Masquelet technique is effective in the treatment of bone defects in PPO patients. This technique does not require specialized training and equipment, it can be performed easily and by surgeons with varying experience and capability.

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Room: MARACANÃ

Abstract no.: 38097

MANAGEMENT OF BACTERIAL SEPTIC ARTHRITIS FOLLOWING ACL RECONSTRUCTION WITH AUTOLOGOUS HAMSTRING GRAFTS: A SYSTEMATIC REVIEW

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Introduction: We assess the available evidence for the management of bacterial septic arthritis following ACL reconstruction with an autologous Hamstring graft. **Methods:** A systematic literature review on Pubmed and EMBASE databases was performed. 764 publications were initially identified. 28 were eligible for full text review and 15 fulfilled the inclusion criteria. All were retrospective studies other than one prospective case control. Studies with 3 or more cases of bacterial septic arthritis with a Hamstring graft were included. Where a mixture of graft types was described, data was extrapolated to obtain values for Hamstring grafts only. **Results:** 132 cases of infected Hamstring grafts were identified with a mean (s.d.) patient age of 26 (+/-9) years and follow up of 40 (+/- 24) months. Mean time to presentation from index procedure was 21 (+/-40) days, with 63 (47.7%) and 130 (98.5%) presenting within 2 weeks and 2 months, respectively. The most common organism was Coagulase negative Staphylococcus (n=68, 51.5%), followed by Staphylococcus Aureus (n=28, 21.2%). Arthroscopic debridement with intravenous antibiotics was the most common treatment, performed in 116 (87.9%) cases with an average of 1.6 procedures (up to 6). The graft was preserved in most cases with only 10 (7.6%) removed. 22 (16.7%) cases had continuous joint irrigation of which almost half required an additional formal arthroscopic procedure. **Conclusion:** Arthroscopic debridement and intravenous antibiotics with the primary intention of graft preservation was the treatment of choice among the authors. There appears to be a higher propensity for graft removal in late presentations.

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Room: MARACANÃ

Abstract no.: 38176

**ROTATOR CUFF ARTHROPATHY AND PYOARTHROSITIS
TREATMENT - RESULTS AND CORRELATIONS.**

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POCHINI, Carlos ANDREOLI, Benno EJNISSMAN
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Objective: To evaluate the efficacy of surgical treatment and the relationship between septic arthritis and rotator cuff arthropathy. Methods: 8 surgical drainage of 7 patients with glenohumeral pyoarthrosis were performed. All patients had rotator cuff arthropathy (4 males and 3 females) were aged between 53-93 years (mean 74 years). Six patients underwent treatment with a combination of arthroscopic irrigation and debridement, one patient was treated by open arthrotomy. All patients received systemic antibiotics according to bacterial sensitivity; six patients had pyoarthrosis at the dominant shoulder. Mean duration of symptoms prior to surgical lavage was 6 weeks. Results: 7 patients achieved satisfactory results, with 2 excellent and 5 good functional assessment was performed using the score of the University of California (UCLA), only one patient had to undergo a new arthroscopic procedure. In 4 cultures, Staphylococcus aureus was identified, Escherichia coli, in one and in 2 cases of which, the patients had empiric antibiotic therapy, these cultures were negative. Among the procedures associated we performed 4 tenotomies biceps and a resection of lateral clavicle due to osteomyelitis. Conclusion: Surgical treatment was effective in cases of arthritis associated with rotator cuff arthropathy. It should be remembered in patients with rotator cuff arthropathy with subclinical and laboratory signs changed, the diagnosis of pyoarthrosis. Late diagnosis should be avoided.

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Time: 14:00 - 15:30

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Abstract no.: 37758

RECENT TREND AND CLINICAL ANALYSIS OF THE INFECTIOUS SPONDYLITIS

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Introduction The infectious spondylitis is one of the common spinal disorders. There are quite a few patients who need the surgical treatment. In this presentation, the recent trend and clinical analysis of the infectious spondylitis is reported. **Materials and methods.** 68 cases with the infectious spondylitis are reviewed. There are 45 males and 23 females. Their average age is 70.7 years old from 47 to 90. 57 out of them are pyogenic spondylitis, 8 are tuberculous spondylitis and 3 mycotic spondylitis. Yearly change of the numbers of this lesion, infected site of the spine, causative bacteria, treatment methods and prognosis are analyzed. **Results** 45 cases in lumbar spine, 10 cases in thoracic spine, 9 cases in cervical spine and 4 cases in thoracolumbar. The causative bacteria is identified in 22 cases among 39 through. Staphylococcus aureus is the most popular causative bacteria. MRSA and MSSA are followed. Diabetes mellitus is the most popular complication. 38 cases are treated by the conservative therapy, 9 cases by the percutaneous drainage and 21 cases by surgical procedure. 7 cases are dead because of the basic lesions. 54 cases have good recovery and returned to the social life. **Discussion and conclusions** Recent clinical feature is characterized by the increase of the elder patient, compromised host and the patient unless acute inflammatory symptoms. The deverification of the causative bacteria and resistant bacteria is also a trend. It is concluded that early surgical treatment must be considered for the patients with progressive neurological paralysis.

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Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37795

INFECTIOUS COMPLICATIONS OF THE POLYTRAUMA VICTIMS AGAINST A BACKGROUND OF EXOGENOUS INTOXICATION

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Ukrainian Disaster Medical Center, Kiev (UKRAINE)

Introduction. The peculiarity of contemporary traumatism is a high specific gravity of polytrauma at the background of exogenous intoxication that often have infectious complications. Materials and methods. A comparative analysis of infectious complications of trauma process has been carried out at 548 polytrauma victims and exogenous intoxication and at 486 victims without intoxication. Results. Infectious complications were the reason of death by the victims with polytrauma and exogenous intoxication in 65,9 % of cases. Victims with exogenous intoxication develop infectious complications 14.6 % more often than victims without intoxication. Complications of respiratory system occur 14,3 % more often. Pneumonia occur 19,2 % more often in victims with exogenous intoxication, tracheobronchitis – 20,9 %, pleurisies – 9,8 %, empiemae pleura – 7,3 %. Postoperative wound infections occur 23,7 % more often by victims with polytrauma and exogenous intoxication. Bedsores occur by 7,5 %, sepsis by 16,8я%, peritonitis – by 4,9%, cystitis – by 21,6 %, postoperative wound infection - by 23,7 %, providebits - by 5,2 %, meningitis - by 4,6 % more often. Conclusions: 1. Infectious complication by polytrauma victims and exogenous intoxication have complicated nosological characteristics with domination of respiratory system complications; 2. There exist a higher risk of infectious complications of trauma process by the victims with exogeneous intoxication in the periods of stable and instable adaptation. 3. Infectious complications by the polytrauma victims and exogeneous intoxication need further investigation.

Date: 2014-11-19

Session: Infection: Short Oral Presentations Infection

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36515

DOES SEPSIS CAUSE AMPUTATION OF LOWER LIMB?

Ralf-Achim GRUENTHER, Christian HOFMANN

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Introduction: A study of all rehabilitated amputees of the lower limb was performed in the centre of rehabilitation HELIOS Baumrainklinik, Bad Berleburg, Germany. Methods: retrospective case control study. Clinical reports of 448 patients with amputations of the lower limb clinically rehabilitated from 2010 to 2013 were evaluated. Sepsis is classified: SIRS, sepsis and severe sepsis. Results: 36 patients – 8,03% of all - suffered a loss of lower limb caused by a severe sepsis: 1 patient suffered an exarticulation of both hips, 20 patients suffered a transfemoral amputation (1 of both legs), 17 patients lost their leg by transtibial amputation (1 of both legs). 13 patients presented a sepsis by MRSA (36,11%), 8 patients MSSA, 4 patients by multiresistent Acinetobater, 2 patients by MRSE, 13 patients other MRG (36,11%). Epidemiology: The mean age of the amputees was 61,33 years, with 25 men and 1 women. Marital status: 16 patients are married (44,44%), 7 divorced, 5 widowed, 7 unmarried. 24 patients are retired (66,67%). School-leaving qualifications: 22 elementary school (61,11%), 8 secondary school, 1 high school (Gymnasium), 5 unknown. The medial time of hospitalization in the clinic for rehabilitation of the amputated patients suffering sepsis was 27,23 days. Mobility class of amputees at the beginning of hospitalization: class 0 all 36 patients (100%). Mobility class of amputees at the end of hospitalization: class 0 are 5 patients (27,78%), class 1 are 6 patients (16,67%), class 2 are 17 patients (47,22%), class 3 are 3 patients (8,33%).

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 38368

MINIMALLY INVASIVE STABILIZATION OF UPPER LIMB PATHOLOGICAL FRACTURES WITH AN INTRAMEDULLARY POLYMER

**Steffen HECK, Sascha GICK, Dietmar PENNIG
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Introduction: Pathological fractures of the upper limb seriously affect quality of life and nursing care. The therapeutical aim is to achieve pain relief allowing mobilization preferably without extensive surgical procedures. Materials and Methods: Through a small incision using the Seldinger-technique a Dacron balloon catheter is inserted into the medullary canal after reaming with a flexible cannulated drill. The balloon is filled with a liquid non-toxic plastic monomer. Curing of the monomer using visible-blue- light (wavelength 436 nm) through a fiberoptic cable is achieved within 300-600 seconds creating a customized intramedullary-rod. The implant adapts to the often irregular shape of the medullary cavity. After polymer-formation a locking screw may be inserted through implant and bone to increase rotational stability. Results: Twelve long bone pathological fractures were treated in 10 patients (humerus 8x, radius 2x, ulna 2x). There were 8 female and 2 male patients, average-age of 73,3 years. Primary pathologies consisted of breast cancer, prostate cancer, plasmocytoma and lung cancer. The average operating time was 53 minutes and all implants were inserted through incisions of 15 mm or less. Stabilization allowed immediate post-operative physiotherapy and use of the upper limb in all patients. Conclusion: Minimally invasive treatment of pathological fractures using an intramedullary polymer implant is suitable to manage pathological fractures affecting one or more sections of long bones in the upper limb. The radiolucent polymer allows radiological visualization of the entire bone and facilitates radiation therapy in select cases. Stability may be increased with transverse locking screws.

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 38183

MASSIVE CALCIUM PHOSPHATE CEMENT (CPC) GRAFTS FOR GIANT CELL TUMOR OF LONG BONE

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Object: The purpose of this study is to evaluate radiological and clinical outcome of massive calcium phosphate cement (CPC) grafts for giant cell tumor (GCT) of long bone. **Methods:** Twenty-six patients (14 males and 12 females) were enrolled in this study. The median age was 38 years (range, 19-63 years) and the mean follow-up period was 62 months (range, 10-130 months). The site of tumor was proximal femur in 2, distal femur in 16, proximal tibia in 6, proximal fibula in 1, and distal tibia in 1 patient. Sixteen patients were graded as Grade II and 10 as Grade III (Campanacci). The mean tumor volume was 68.6 cm³ (range, 3.2-199.0 cm³). Internal fixations were combined in only 2 patients. **Results:** The mean limb function was 98.8% (range, 93-100%). Local recurrences and lung metastasis was detected in 2 and 1 patient, respectively. No infection and fracture were detected. Twenty-two of 26 lesions were involved in knee joint, and only one osteoarthritic change was observed. Seventeen of 26 patients showed the repair of a wide cortical window by remodeling. No obvious absorption of CPC was found. The incorporation of CPC with surrounding host bone was observed in all patients. **Conclusions:** Our results appeared that CPC provided the sufficient and durable structural stability by the bony incorporation without the adverse effect to adjacent joint cartilage and local recurrence. CPC might induce the osteoinduction for the repair of cortical bone defect. Further long-term follow-up and large number studies are needed.

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 38177

EXTREMELY LARGE EXTREMITY SOFT TISSUE SARCOMAS AND CHALLENGES IN LIMB SALVAGE SURGERY

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Introduction: The average size of a soft tissue sarcoma at diagnosis in the United Kingdom is about 10 cm. Soft tissue sarcomas are often detected when they have become extremely large making limb salvage surgery challenging due to the proximity/involvement of neurovascular structures. Aim: The aim of the study is to assess the challenges and solutions from performing limb salvage surgery for extremely large lower extremity sarcomas. Methods and results: Eleven patients with extremely large soft tissue sarcomas of the lower extremity underwent limb salvage surgery over a two year period. The mean size of the tumour was 30 cm [range 20 - 55 cm] and the maximum weight of the tumour was 9.2 Kg. Six patients needed vascular surgical involvement. 'Thigh splitting' approach was used in one patient for tumour resection and four patients required excision of a wide ellipse of skin to facilitate the tumour exposure and wound closure. The femoral nerve was removed with the tumour in two patients. The margins achieved were marginal in 8 patients, planned positive in 2 patients and contaminated in one patient. Two patients have died [one after six months due to metastatic disease and another after four months aged 84] Conclusions: Extremely large lower extremity sarcomas present a surmountable challenge in limb salvage surgery. Planning, adapting surgical exposure/technique and working in a multidisciplinary environment can facilitate limb salvage surgery. The bigger problem of late presentation and prevention of metastases needs to be addressed.

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 38172

OSSEOUS KAPOSI SARCOMA PRESENTING WITH PATHOLOGICAL FRACTURE OF THE LATERAL MALLEOLUS. A CASE REPORT IN THE HOPITAL GENERAL DOUALA

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Introduction; Kaposi sarcoma KS is a multifocal vascular lesion of low grade malignant potential most frequently in mucocutaneous sites. Also commonly involves lymph nodes and visceral organs. Primary bone lesions are rare. Method: We report a case of osseous Kaposi sarcoma presenting with pathological fracture of the left lateral malleolus in a 49year old Mail runner who was found to be HIV positive but with no significant medical antecedence. Diagnosis was made from x-rays and confirmed by open bone biopsy and scintigraphy. Treatment regime included Radiotherapy and Anti retroviral drugs. Conclusion: Primary osseous Kaposi sarcoma is a rare lesion and in this case located in an abnormal site. It is rarely reported in the literature, suggesting the variable pattern of the involvement of this disease. Key words: Kaposi sarcoma, Lateral malleolus, HGD *Dept of surgery-Orthopaedic unit ** Oncology Dept. ` Correspondence: Dr Pius Fokam Hopital General Douala

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 38159

A COMPARATIVE STUDY OF CLINICOPATHOLOGICAL AND CYST FLUID FEATURES BETWEEN SIMPLE BONE CYSTS OF THE CALCANEUS AND THE LONG BONE

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Introduction: Simple bone cysts are benign fluid-filled lesions, commonly seen in long bones of children. The aim of this study was to elucidate the differences in clinicopathological, biochemical, proteomic profiles, and seek a key to pathogenesis and efficient treatment. Methods: 39 surgically treated cysts were evaluated retrospectively. 16 were calcaneal bone cysts and 23 were long bone cysts (16 humerus and 7 femur). All calcaneal bone cysts were treated with curettage and bone substitute grafting. Clinical outcome, and histological features of the fibrous wall were compared. Content of cyst fluid (n=31) was compared with biochemical analysis and proteome analysis. We used QSTAR Elite liquid chromatography with tandem mass spectrometry (LC-MS/MS), coupled with iTRAQ technology, for proteome analysis. Results: 7 patients underwent reoperation due to recurrence. No recurrence was seen in the calcaneal bone cysts. Biochemical and proteome analysis of cyst fluid revealed significantly higher concentration of Alkaline Phosphatase (ALP), Bone Specific Alkaline Phosphatase (BAP), Acid Phosphatase (ACP) and C3 in the long bone cysts, whereas Cholesterol and Apolipoprotein E (ApoE) concentration was significantly higher in the calcaneal bone cysts.($p < 0.05$). In the HE stained specimen of the cyst wall, cholesterol clefts (figure) were seen in 9 out of 16 cases in calcaneal bone cysts, whereas none were seen in long bone cysts.($p < 0.001$). Discussion and Conclusion: 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.

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 38145

PERIPHERAL NEUROPATHIC PAIN AFTER CARBON ION RADIOTHERAPY FOR TREATMENT OF SOFT TISSUE SARCOMA REPORT OF THREE CASES

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Objectives: Carbon ion radiotherapy is an effective treatment modality for unresectable bone and soft tissue sarcomas. Good local control and improved survival rates have been reported. However, it is still a new treatment modality, and information on long-term results and adverse effects needs to be accumulated. **Material and Methods:** We describe three cases of soft tissue sarcomas which underwent carbon ion radiotherapy, followed by severe peripheral neuropathic pain. **Results:** Two patients had malignant peripheral nerve sheath tumor (MPNST) based on neurofibromatosis type 1 (NF1), and the tumors were located in the brachial plexus lesion. Another patient had epithelioid hemangioendothelioma of the elbow. Peripheral neuropathic pain developed 2 to 24 months after treatment, which required increase in the use of analgesics in all three patients. Neurolysis was performed in one case. Local recurrence was observed in the two patients with MPNST, who eventually died of the disease. No recurrence or metastasis was seen in the patient with epithelioid hemangioendothelioma. **Conclusions:** One must be aware of the possibility of severe peripheral neuropathic pain, after applying carbon ion radiotherapy to tumors adjacent to peripheral nerves or neurogenic tumors. Cautious planning of treatment is required.

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 38116

EWINGS´SARCOMA OF THE CALCANEUS TREATED BY LIMB SPARING SURGERY WITH CALCANECTOMY AND RECONSTRUCTION WITH A COMPOSITE OF AN ALLOGRAFT AND A VASCULARISED OSTEOCUTANEOUS FIBULA GRAFT

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Primary malignant bone tumours of the calcaneus are very seldom. Due to poor possibilities to do surgery with wide margins in this region and limited options for reconstruction after calcaneotomy many orthopaedic oncologists use amputation as the preferred surgical treatment. We present two cases of Ewings´sarcoma of the calcaneus treated with limb sparing calcaneotomy and reconstruction with a composite of an allograft and a vascularised osteocutaneous fibula graft. Case 1: a girl, almost 6 years old at the time of calcaneotomy of the left calcaneus August 7th 2012. Case 2: a girl 16 years old at the time of right calcaneotomy October 16th 2013. Both patients received pre- and post-operative chemotherapy. In both cases removal of the calcaneus was performed using a combined medial and lateral incision. In case 1 a femoral head allograft was fitted to replace the removed calcaneus, and in case 2 a calcaneus allograft was used. In both cases, with the aim of obtaining arthrodesis, the allograft was fixed to the talus and cuboid bone with Acutrak titanium screws. A distally pedicled osteocutaneous flap was use for reconstruction of soft tissue, and a 5-6 cm piece of vascularised fibula bone was fitted into the allograft and fixed using staples. Case 1 was allowed weight-bearing in an ankle brace after 3½ months and full weight-bearing with-out brace 8 months postoperatively, when the arthrodesis between allograft and talus was considered healed. Case 2 was 5½ months postoperatively with-out bone healing and still not allowed weight-bearing.

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 38020

PELVIC SARCOMA TREATMENT MODALITIES: OUTCOMES AND COMPLICATIONS

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This is a retrospective cohort study of patients presented to the orthopaedic clinic with pelvic sarcoma and the aim was to assess possible surgical options and complications. There were 56 consecutive patients presented in the period between 1991 and 2010, 30 of them underwent internal hemipelvectomy, and the rest were excluded including: 16 patients had disseminated sarcoma and were not managed surgically and 6 patients were initially treated elsewhere. At the moment of abstract submission, data was for 13 patients (10 boys and 3 girls). Twelve patients presented with hip and lower extremity pain, and one patient presented with abdominal pain. Type of tumor was Ewing sarcoma, in 10 patients, one with chondroblastic osteogenic sarcoma, one with rhabdomyosarcoma and one with osteoblastic osteosarcoma. Mean age at surgery was 11.4 ± 4.2 years ranging from 2.7 to 18.5 years. Two patients had ilium resection (zone1), one patient had pubic bone resection (partial zone3), 2 had resection of zone (1+partial 4), 3 had resection of zone (2+3), 3 patients had resection of zone (1+2+partial 4), and 2 patients had resection of zone (1+2+3). Free fibular graft reconstruction (A-frame) was performed in 2 patients, limb salvage procedure with saddle endoprosthesis in 3 patients, and hindquarter amputation was done in 2 patients. Three patients were diagnosed with metastases at the time of diagnosis, and three were diagnosed with distant metastasis subsequent to local control surgery, and all were managed accordingly by the standard protocols. Further data collection, acquisition and analysis will benefit in assessment of the outcome of different treatment modalities.

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37988

**O ARM 3-D NAVIGATION FOR SURGICAL RESECTION OF OSTEIOD
OSTEOMA AND OSTEOLASTOMA OF THE SPINE**

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Camila DE MATTOS

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This retrospective cohort study was conducted to examine all patients with spinal osteoid osteoma (OO) or osteoblastoma (OB) who were treated at our institution between 2002 and 2011. The aim was to describe the outcome of surgical treatment of spinal OO and OB with O-arm guidance compared to the conventional C-arm guidance. There were 18 patients including 10 with spinal OO (6 boys and 4 girls) and 8 with spinal OB (4 boys and 4 girls). Mean age at surgery was 11.6 years and mean follow up was 34 months. All patients presented with back or neck pain, 5 with back or neck stiffness, and 2 had radicular pain. Four patients developed scoliosis, all had spinal OB. Surgical resection using C-arm guidance was done in 11 patients (7 OO and 4 OB), and with O arm guidance in 7 patients (3 OO and 4 OB). All patients in O-arm group underwent complete tumor resection confirmed by intraoperative imaging. Length of surgery and blood loss were related to surgery extension with no difference between study groups. Two patients developed recurrence of tumor and underwent a second surgery (one in O-arm group who had C2 OO, and one in C arm group who had L3 OO). At last follow up, all 18 patients were pain free and there was no sign of tumor recurrence or vertebral instability. In conclusion, O arm is a 3D fluoroscopy technology that allows safe and effective localization of tumor and confirmation of tumor resection during surgery.

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37944

PROGNOSTIC VALUE OF NOVEL COMBINED SCORING SYSTEM IN PATIENTS WITH HIGH-GRADE SOFT TISSUE SARCOMA

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Introduction: In this study, we generated the combined scoring system of the treatment-related factors and assessed the prognostic value of this scoring system on overall survival (OS) and event-free survival (EFS). **Methods:** Seventy-nine patients (64 patients in UICC/AJCC stage III and 15 in stage IV) were included. They were treated by doxorubicin or ifosfamide-based caffeine-potentiated chemotherapy and surgery. Caffeine was combined due to the cytotoxic effects of anticancer drugs. We developed the combined scoring system using radiological response to chemotherapy [MRI and 201Tl or 99mTc-MIBI scintigraphy (0 or 2)], histological response (0 or 2), and the oncological status after surgery [a: no residual tumor (2), b: microscopic residual tumor (-1), c: macroscopic residual tumor (-2), d: residual metastatic tumor (-4)]. The patients with a total score ≥ 4 points were classified as good group. **Results:** The response rate of preoperative chemotherapy was 59.5% in MRI, 55.7% in radioisotope scan and 35.4% in pathology. Oncological status was 62 cases in a, 4 in b, 1 in c, and 12 in d. Average score was 3.8 points and 48 cases (60.8%) were classified as good group. In univariate analysis, the patients of good group showed significantly better OS and EFS ($p < 0.001$). In multivariate analysis, the patients of poor group (< 4 points) showed significantly poor EFS (HR 6.24, $p = 0.014$) and marginally poor OS (HR 5.20, $p = 0.060$). **Conclusion:** This newly developed combined scoring system could be considered as prognostic markers in high-grade soft tissue sarcoma.

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37507

HISTOPATHOLOGY OF GCT OF BONE: A NEGLECTED APPROACH

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Introduction & aims: Benign tumour tag of GCT of bone is misleading because 3% of GCT are primarily malignant or will undergo malignant transformation and metastasize. This study was done to evaluate the histology of aggressive and recurrent GCT. Method: 31 cases of recurrent and aggressive GCT were recruited in prospective cohort study conducted in the Department of Orthopedics, AIIMS from November 2010 to October 2012. Patients were evaluated clinically, radiologically and histologically. Campanacci grading and Enneking staging system were used. Only Grade II and Grade III tumours were included. Histological evaluation was done on hematoxylin and eosin stained sections by an expert in bone tumours and histological grading was done according to the grading proposed by Netherlands Committee on Bone Tumors for Giant cell tumours based on cellular atypia, mitotic index, number and size of giant cells. Results: Out of total eighteen patients of Recurrent GCT two patients were of Grade III, and sixteen patients were of Grade II. Necrosis was present in one case of grade III and one case of grade II. Out of thirteen patients of primary Aggressive GCT all thirteen were Grade II histologically. None of the case was either Grade I (purely benign) or Grade IV (malignant) in either of the aggressive or recurrent GCT. Conclusions: Recurrent and aggressive GCT of bone are benign on histopathology but usually have features of cytologic atypia and increased mitosis. Hence histopathology although neglected can also give an idea about the aggressiveness of GCT if carried out in detail.

Date: 2014-11-19

Session: Tumours: Short Oral Presentations - Oncology I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37433

THE EFFECT OF TUMOUR VOLUME ON LOCAL RECURRENCE OF DESMOID TUMOURS OF THE LIMB

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Introduction: Surgical resection of limb desmoid tumours is limited by high recurrence rates. Age, sex, tumour location, tumour size, and β -catenin gene mutations all increase recurrence rate. The aim of this series is to investigate the relationship between tumour volume and recurrence. Materials and Methods: Retrospective analysis of patients undergoing surgery for limb desmoid tumours over an 18-year period. Patients with abdominal desmoid tumours were excluded. Tumour volume and tumour margin status were recorded from pathology reports and correlated to incidences of recurrence. Results: 17 patients were included in the final cohort. Recurrence occurred in 8 cases (47%). Tumour margin status was negative in 6 of the 8 cases of recurrence, positive in one incidence, and undetermined in another. Mean tumour volume at excision was 145.7mL. Mean tumour volume at excision was significantly greater in the group with recurrence (255.4mL) than in the group without recurrence (48.2mL) ($p=0.049$). Discussion: Predicting recurrence of desmoid tumours is challenging. Adjuvant radiotherapy can reduce recurrence rates following surgery, and identification of patients at higher risk of recurrence could select those patients as candidates. This series has found that larger tumour volume significantly increases recurrence rate in desmoid tumours of the limb. Tumour volume can be calculated pre-operatively from MRI scans, which can also aid pre-operative planning in tumours which are difficult to resect. MRI scanning is therefore a valuable tool in the pre-operative work-up of these patients.

Date: 2014-11-20

Session: Research: Short Oral Presentations Research

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 38394

RAPID CONSTRUCT OF BIOACTIVE BONE-SUBSTITUTE BY USING OF STEM CELLS SCREEN-ENRICHING CIRCULATION SYSTEM (SECS) TO PROMOTING BONE REPAIR: A PRIMARY CLINICAL REPORT

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Objectives: To observe effects and safety of bone marrow stem cells screen-enriching circulation system (SECS), and its product of bioactive bone-substitute (BBS). **Methods:** Since March 2013, 24 patients consecutively underwent the treatment of rapid construct of BBS by SECS. 19 men, 5 women, were at the average age of 41 yrs (range: 16-64 y/o). Therein 15 cases were nonunion or delay-union fractures (4 in femur, 9 in tibia and 2 in humerus), and the rest were 5 cases of benign bone tumor, 2 calcaneal fractures, 2 tibia plateau fractures which needed bone graft. About 80ml bone marrow were harvested peri-operatively. With circulating screen-enrichment (70 Hz, 10 minus) in SECS, BBS was constructed by the combination of bone marrow stem cells and porous tri-calcium phosphate, and was grafted back immediately. Bone marrow samples were monitored in cell viability, bacteriology and stem cells enrichment rate, and all the patients were requested follow-up in clinic. **Results:** 23 patients followed up for 6.9±2.9 months. The nucleated cells' viability before and after screen-enrichment were 90.80%±2.75% and 89.93%±3.20% respectively. All the bacteriological tests were negative. The stem cells enrichment rate was about 84.6%. Only 2 cases had wound exudation, and healed simply by dressing exchange. 15 patients (>6 m follow-up) had good bone repair, and the rest was continually followed up. **Conclusions:** Rapid construct of BBS by SECS may be a quick, safe and effective way for screen-enrichment of bone marrow stem cells, and be estimated a useful, easy technique for clinical bone repair and regeneration.

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Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37966

ANALYSIS OF THE EVOLUTION OF ROTATOR CUFF TEARS: A PATHOLOGICAL STUDY PERFORMED IN RATS

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Introduction: Rotator cuff tears are a common cause of pain and functional impairment. What happens at the extra cellular environment of the supraspinatus muscle is still controversial. OBJECTIVE: The aim of this study is to evaluate the supraspinatus muscle after a rotator cuff tear in Rats, through an immunohistochemical, and histological evaluation. METHODS: The study was conducted with 25 adults Wistar rats, performing a supraspinatus tear in all rats. The rats were divided in five groups of five animals, sacrificing five immediately - Group 1, after 24 hours - Group 2, 48 hours - Group 3, 30 days - Group 4 and three months - Group 5. We study the tendon degeneration and vascular proliferation by histological evaluation. At the immunohistochemical evaluation we study the extra cellular matrix by the expression of the heparanase enzyme and vascular proliferation by VEGF expression. RESULTS: The enzyme heparanase expression diminish at the last group with a tendency to a statistically significant result ($P= 0.0714$). Increased expression of VEGF was observed in group 2 ($P < 0.05$) and 5 ($P=0.0749$) compared to group I. At the histological evaluation vascular proliferation was observed at 24 hours and 48 hours after injury. The tendon degeneration was observed until 30 days after injury. At three months we observed fibrosis. CONCLUSION: The Heparanase enzyme expression can be related to tendon degeneration. As it had already been showed the VEGF expression can be related to vascular proliferation.

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Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37869

THE IN VITRO STUDY ON THE CONTROLLED DRUG DELIVERY PROCESS OF THE ANTI-TUBERCULOSIS β -TRICALCIUM PHOSPHATE ARTIFICIAL VERTEBRAL BODY

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Four kinds of cylinder β -TCP artificial vertebral bodies (AVB) with a central tunnel composed of microporous controlled drug releasing region, reinforced dense region and porous region were developed: the controlled drug releasing reinforced porous β -TCP (CRRP), the controlled drug releasing porous β -TCP (CRP) and the pure porous β -TCP with the different diameter of tunnel (3mm (PP-3) and 8mm (PP-8)). The height of artificial vertebral body was 30mm and the diameter was 14mm. The AVBs were overhang in 200mL PBS after the central tunnels were filled directly with 0.3g of rifampicin powder. The eluent was replaced every day, and the concentration of rifampicin was determined. The mechanical study showed that the longitudinal compressive strength of the CRRP, CRP, PP-3 and PP-8 was 3.32 ± 0.33 , 2.26 ± 0.14 , 1.09 ± 0.05 , 0.71 ± 0.04 MPa respectively and 2.91 ± 0.27 , 1.75 ± 0.19 , 0.62 ± 0.07 , 0.41 ± 0.05 MPa after 40-week rifampicin releasing process. The cumulative quantity of rifampicin releasing from the CRRP, CRP, PP-3 and PP-8 was 58.14, 62.37, 234.87 and 289.02 mg respectively and the corresponding cumulative rate was 19.38%, 20.79%, 78.29%, 96.34%. The daily rifampicin releasing quantity per unit of area of controlled releasing region was $0.32\pm 0.09\mu\text{g}/\text{mm}^2$ during the first 4-week in the CRRP. The results suggested the releasing process of AVBs could last for at least 40 weeks. The microporous structure played a major role in the releasing process rather than the macroporous structure. The CRRP had good mechanical property and its daily rifampicin releasing quantity per unit of area of reinforced controlled region could be controlled.

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Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37691

ORTHOPAEDIC TRAUMA TRAINING: ARE WE MAKING THE MOST OF OPPORTUNITIES?

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Introduction: Implementation of the European Working Time Directive (EWTD) in the UK has significantly reduced the number of training hours available to junior surgeons. It has been reported that nearly a quarter of all orthopaedic training opportunities in trauma theatres are not being utilized. The aim of this study was to identify missed orthopaedic training opportunities in a major trauma centre. Methods: A search was carried out on a prospective online database (Bluesprier) for all trauma procedures carried out at a level 1 trauma centre in the UK over a three month period. The type of surgery, grade of operating surgeon and assistant were analysed to determine if training opportunities were being maximised. Results: A total of 713 consecutive operations were carried out during the 3 month study period. Consultants performed just under half of all cases and nearly two thirds of complex procedures. In 26% of cases, a higher surgical trainee was assisting a more senior surgeon and in 22% of cases, a consultant or associate specialist was operating with no trainee present. Discussion: Nearly half of the training opportunities are not being utilised by orthopaedic trainees. Careful allocation of trainees to trauma theatre lists or specific operations can help maximise training opportunities. A more 'goal-directed' approach may allow for useful time allocation.

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Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37653

APPRAISAL OF INTRA-OPERATIVE SALVAGED BLOOD FOR AUTOLOGOUS TRANSFUSION

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Intra-operative blood salvage is commonly used in orthopedic surgery. However, knowledge regarding the quality of salvaged red blood cells (RBC) is in deficit. In this study the aim was to compare fresh venous blood to salvaged blood. After achieving an IRB approval, a cohort study of five patients undergoing spine surgery was done. Samples of peripheral fresh blood were compared with samples of processed salvaged blood (OrthoPATTM, Haemonetics, Braintree, MA, USA). Using the computerized Cell Flow-Properties Analyzer (CFA), RBC flow properties (deformability, adherence and aggregability) were analyzed. Our results showed that the average values for deformability as measured by elongation ratio (ER) for fresh blood cells (F-RBC) and OrthoPATTM-processed RBC (OP-RBC) were 1.53 (SD=0.125) and 1.51 (SD=0.04) respectively. Cell adherence was established by the number of un-detachable RBC, that was 0 (SD=0.66) and 0.4 (SD=0.49) for F-RBC and OP-RBC, respectively. Cell aggregability was evaluated using values of Average Aggregate Size (AAS), large aggregates' fraction (LAF) and aggregate strength index (ASI). In all parameters values for OP-RBC were not significantly different than those of F-RBC. All calculated P- Values were well higher than 0.05. We conclude that the average values of OP-RBC flow properties are in a range known for F-RBC. Given the data it is reasonable to state that autologous blood transfusion from intra-operative salvaged blood can and should be used more widely in cases when significant blood loss is expected.

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Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37608

PLATELET RICH PLASMA IS EFFECTIVE IN CHRONIC PLANTAR FASCIITIS

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Treatment of chronic plantar fasciitis has eluded surgeons for a long time. The purpose was to evaluate the efficacy of a single injection of leukocyte free platelet rich plasma in plantar fasciitis. 120 consecutive age, sex and BMI-matched patients of bilateral chronic plantar fasciitis were enrolled for this prospective randomized controlled double blinded clinical trial. 60 patients received local infiltration of leukocyte-free Platelet-rich plasma bilaterally with 60 as controls. Functional outcome and level of satisfaction were measured by Visual Analogue Scale, AOFAS Foot Scale, WHO Quality of Life (WHOQOL) questionnaire, Short-Form 36 Health status questionnaire (SF-36). There was a significant decrease in VAS score in PRP group ($p=0.000$) with increase in placebo group ($p=0.030$) after 6months. Functional outcome scores (AOFAS, WHOQOL, SF-36) improved significantly in PRP group. 24.12%, 32.08%, 37.05% and 20.10% improvement were observed in AOFAS scores, WHOQOL, PCS scores and MCS scores respectively in PRP group at 6 months follow up There was no improvement in functional status with normal saline injection, the improvement obtained with PRP was greater in magnitude and sustained over time. Thus single injection of PRP was more efficacious than placebo in chronic cases of plantar fasciitis for improving the pain and functional status of the patients.

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Abstract no.: 37166

THE CONCENTRATION LEVEL OF ANTITUBERCULOUS DRUGS IS LOWER THAN EFFECTIVE BACTERICIDAL CONCENTRATION IN OSSEOUS TISSUES 4 MM SURROUND THE SCLEROTIC WALL MEASURED BY HPLC

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Concentration level of antituberculous drugs in the focus of spinal tuberculosis has been reported. However, the mapping of drugs distribution in different regions surrounding the foci of tuberculosis vertebrae remains unexplored, as well as the metabolite of the drugs. 38 patients with spinal tuberculosis were assigned into sclerotic group and nonsclerotic group based on computed tomographic (CT) images. Samples of serum, ilium, and pathologic vertebral tissues, including the foci, sclerotic wall, region I of abnormal osseous tissues (within 4 mm), and region II of abnormal osseous tissues (more than 4 mm) from the foci were collected during operation. Concentration levels of isoniazid and rifampin were higher than the effective bactericidal concentration (EBC) level and that of pyrazinamide was five times of the minimal inhibitory concentration in the region II of abnormal osseous tissues and the ilium of nonsclerotic group. Three drugs achieved EBC in the region I of abnormal osseous tissues in the nonsclerotic group but not in the sclerotic group. Except pyrazinamide no drugs and their metabolite were identified in the foci of the sclerotic group, whereas there is trace of drugs and their metabolite in the foci of the nonsclerotic group. Three drugs resulted in an effective bactericidal concentration level in osseous tissues around the foci of spinal tuberculosis except the osseous tissues 4 mm surrounding the sclerotic wall. The results suggested that osseous tissues within 4 mm surrounding the sclerotic wall should be excised during the surgery

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Abstract no.: 37165

A NEW ACCURATELY AND RELIABLY METHOD TO MEASURE THE CONCENTRATION OF ISONIAZID CONCENTRATION IN RABBIT VERTEBRAE BY ISOTOPE TRACING TECHNIQUE IN CONJUNCTION WITH HPLC

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Isoniazid (INH) is an effective agent for TB therapy that rapidly permeates the bacterial cell membrane via passive diffusion. Medications compounded with INH and other ATDs are routinely applied to surgical sites at the completion of surgery to kill postoperative residual tubercle bacilli locally, but the retention of high INH concentrations in vertebrae remains unknown. The objective of this study was to control experimental errors during the process of collecting osseous tissue samples to accurately and reliably measure the concentration of ATDs. In this study, isotope tracing was used in conjunction with high-pressure liquid chromatography (HPLC) to address this. INH and technetium-99 m-labeled INH were applied to the vertebrae of rabbits. After 2 and 6 h, osseous tissues containing INH, as determined by radionuclide imaging, were collected for detection with HPLC. The results showed that INH mainly stayed around the vertebrae 6 h after its application and did not permeate widely into the blood or other organs, except for the kidneys. The standard deviations of INH concentrations in the technetium-99 m-INH group were approximately four-fold smaller than those in the INH group. This method of coupling isotope tracing and HPLC can effectively limit experimental error during sample collection, allowing accurate and reliable identification of the concentration levels of INH in osseous tissues in vivo.

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Room: MARACANÃ

Abstract no.: 37045

THE STUDY OF THE DISTAL FEMUR ROTATIONAL ALIGNMENT IN THE HAN NATIONALITY AND ITS CLINICAL SIGNIFICANCE

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Introduction: To explore the distal femur rotational alignment in normal Chinese of Han nationality and investigate its clinical application. Methods: 409 volunteers from Beijing, Hebei, Xinjiang and Chongqing province, aged from 17 to 65 were administered CT scan of their lower limbs and the CT scan images of 746 normal knees were obtained. With computer-assisted image processing and reconstruction, the correlative parameters, including posterior condylar angle (PCA), condylar twist angle (CTA), and the angle between clinical transepicondylar axis and surgical transepicondylar axis (CSA) were measured. Results: PCA: $3.29^{\circ} \pm 1.24^{\circ}$ in average, $3.31^{\circ} \pm 1.30^{\circ}$ in males, $3.26^{\circ} \pm 1.17^{\circ}$ in females, $3.24^{\circ} \pm 1.26^{\circ}$ in left knees and $3.33^{\circ} \pm 1.22^{\circ}$ in right knees. CTA: $7.06^{\circ} \pm 1.63^{\circ}$ in average, $7.02^{\circ} \pm 1.63^{\circ}$ in males, $7.11^{\circ} \pm 1.63^{\circ}$ in females, $7.06^{\circ} \pm 1.68^{\circ}$ in left knees and $3.33^{\circ} \pm 1.22^{\circ}$ in right knees. CSA: $3.81^{\circ} \pm 1.14^{\circ}$ in average, $3.72^{\circ} \pm 1.11^{\circ}$ in males, $3.91^{\circ} \pm 1.17^{\circ}$ in females, $3.83^{\circ} \pm 1.20^{\circ}$ in left knees and $3.80^{\circ} \pm 1.08^{\circ}$ in right knees. There was no significant difference between males and females, as well as left knees and right knees in terms of PCA and CTA. There was no significant difference between left knees and right knees, but significant difference between males and females in terms of CSA. CSA was larger in females than in males. Conclusion: The result of the distal femur rotational alignment in normal Chinese of Han nationality obtained in this study is relatively accurate and can make it more precise in total knee arthroplasty. Individual handling and different locating methods should be applied on the determination of distal femur rotational alignment in performing the surgery.

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Abstract no.: 36959

AUTOLOGUS PLATELET RICH PLASMA INFILTRATION, AN EXCITING SOLUTION IN THE MANAGEMENT OF COMPLEX WOUND

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It is not uncommon to come across the complex wounds associated with infections, exposed bone/tendons ,Pressure sores, diabetic sores , tropical ulcers etc which are resistant to healing. Management of such wound is a big challenge and delay in healing leads to further complications inviting larger morbidities. An effective simple solution still remains a challenge under such conditions. In this prospective study such complex wounds, were treated with autologous infiltration of Platelet rich plasma (PRP), adjunct to the standard wound care. A 4-6ml of PRP was prepared from Patients own blood (20 ml) and injected at the interval of 3 days (2-3 times) to 7 days , at a distance of 2cms in the wound surroundings/ edges. The wounds responded dramatically to this additional management, and healed promptly. This practice yielded encouraging results, including early control of infection (within 7-10days). None of them required the full thickness skin grafts/ flaps, preventing lots of resource burden and morbidity to the Patients. Prior to clinical study we conducted a rabbit -model experimental study on tendon healing with PRP to understand the healing benefits of PRP The PRP has immense biological potentials towards healing through different growth factors, and lysozymes, which also helps in early infection control. It is a low cost , safe effective solution for wound management, to be used as an additional intervention along with standard wound care.

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REQUIRED CEMENT VOLUME FOR VERTEBROPLASTY

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Introduction: Percutaneous vertebroplasty is the simplest of vertebral augmentation techniques. It proved to be minimally invasive and low-risk procedure, but has some disadvantages with relatively high number of bone cement leaks and adjacent vertebral fractures. A cadaveric thoracolumbar functional spinal unit model was used to evaluate the biomechanical properties of different cement fill volume and cement placement in vertebroplasty. The aim of present cadaveric study was to determine minimal percentage of fill volume in vertebroplasty in order to restore vertebral stiffness and adjacent intradiscal pressure. Methods: Thirteen thoracolumbar spine mobile segments were loaded to induce vertebral fracture. After fracture vertebroplasty was performed four consecutive times, the injecting volumes being 5% of fractured vertebral body volume. Biomechanical testing was performed before, after the fracture and after each cement injection. Results: After vertebral fracture compressive stiffness was reduced to 47% of prefracture value and was partially restored to 63% after 10% cement fill. With vertebroplasty intradiscal pressure gradually increased, depending on specimen position, to total of 58%-73% at 15% of cement fill. Conclusions: The compressive stiffness and intradiscal pressure increase with the percentage of cement fill, and 10% - 15% of cement fill was the limit beyond which no substantial increase in the compressive stiffness and intradiscal pressure was detected.

Date: 2014-11-20

Session: Research: Short Oral Presentations Research

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 36910

EVALUATION OF A LOCAL ORTHOPEDIC RESIDENCY TRAINING PROGRAM AND COMPARISON WITH A SELECTED CANADIAN RESIDENCY PROGRAM

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The primary aim of the present study was to assess the quality of the local orthopedic residency training program in Saudi Arabia. As a comparator, a cross-sectional survey involving 76 local residents and 15 Canadian-trained residents at McGill University (Montreal, Quebec) was conducted. The results showed that Canadian residents read more peer-reviewed, scholarly articles compared with Saudi residents ($P=0.002$). The primary surgical role for residents was to hold retractors during surgery. The survey respondents strongly supported the ability to recommend removal of incompetent trainers. Saudi trainees were more apprehensive of examinations than Canadian trainees ($P<0.0001$). Most residents preferred studying multiple-choice questions before examinations. Saudi and Canadian participants considered their programs to be overcrowded. Unlike Canadian participants, Saudi trainees reported an inadequate level of training ($P<0.0001$). In conclusion, educational resources should be readily accessible and a mentorship system monitoring residents' progress should be developed. The role of the resident must be clearly defined and resident feedback should not be ignored. Given the importance of mastering basic orthopedic operative skills for residents, meaningful remedial action should be taken with incompetent trainers.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36425

**UNPLANNED OVERNIGHT ADMISSIONS FOLLOWING DAYCASE
ARTHROSCOPIC SHOULDER SURGERY AT ELECTIVE
ORTHOPAEDIC CENTRE**

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Introduction: Shoulder arthroscopic procedures are generally considered safe and associated with low complication rates. The conversion from open to arthroscopic procedures over the past decade, although technically more challenging, has reduced recovery time and improved efficiency. As a result, a majority of these procedures can be carried out as planned day-cases. Unplanned Overnight Admissions following daycase shoulder arthroscopic procedures at South West London Elective Orthopaedic Centre analysed in this study. Objectives: To study the complication rates, service satisfaction and percentage of unplanned overnight admissions following daycase Shoulder arthroscopic procedures. Methods: Review of 163 daycase shoulder arthroscopic procedures conducted over 15 months between October 2011 and December 2012. Four surgical procedure subcategories were used to analyse the data including rotator cuff repairs, capsular release, subacromial decompression and shoulder stabilisation. Complication rates, service satisfaction and Unplanned prolonged stays studied. Results: 77% of rotator cuff repairs, 85% of capsular release, 90% of subacromial decompression and 81% of shoulder stabilisation procedures were performed as daycase. Service satisfaction overall 92%. Incidence of wound infection was 2.1% and pulmonary embolus was 0.7%.. The incidence of pneumonia, myocardial infarction, stroke, joint infection, nerve palsy and DVT was 0.0%. Conclusions: Higher patient age, higher ASA grade and more complex arthroscopic procedures are significant risk factors for unplanned overnight admissions in day-case arthroscopic shoulder surgery. Documented causes for overnight stay included abnormal post-operative observations, pain and drowsiness. 80% of the extended stay patients were identified as having potentially preventable overnight stay which has significant cost implications.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36700

**A STUDY TO COMPARE THREE DIFFERENT DOSES OF
BUPIVACAINE FOR SPINAL ANAESTHESIA IN PATIENTS
UNDERGOING KNEE ARTHROSCOPY**

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Pant Hospital, NEW DELHI (INDIA), ³Sriramachandra medical College
and Research Institute, CHENNAI (INDIA)

Hyperbaric bupivacaine is frequently used for spinal anaesthesia in patients undergoing knee arthroscopy. However, data regarding doses of spinal bupivacaine that provide adequate anaesthesia with minimal recovery time for ambulatory surgery is extremely scanty. Sixty patients of either sex, scheduled to undergo elective knee arthroscopy were studied. Group I (n=20) received 0.6ml (3mg), group II (n=20) received 0.8ml(4mg) and group III (n=20) received 1.0ml (5mg) of 0.5% hyperbaric bupivacaine for unilateral spinal anaesthesia. Maximum cephalad spread of sensory block on dependent side was T12 (T12-L1), T10 (T9-T10) and T8 (T8-T9) in groups I, II and III respectively. The duration of motor block (mean±SD) (minutes) was 73± 26.86, 77.17±27.51 and 110.54±31.80 in groups I, II and III respectively. Time taken (mean±SD) (minutes) for regression to S2 dermatome was 124±31.99, 136.58±18.84 and 186.47± 48.98 in groups I, II and III respectively. None of the patients had hypotension. Bradycardia was observed in 3 patients in group III. Two patients required supplemental analgesic and one patient required GA in group I. One patient each in group I and III experienced tourniquet pain and urinary retention. A 4mg dose of 0.5% hyperbaric bupivacaine is recommended for providing unilateral spinal anaesthesia in patients undergoing arthroscopy of moderate duration.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36831

**THE EPIDEMIOLOGY OF RECREATIONAL WATER SPORT
INJURIES: A CASE CONTROL ANALYSIS**

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Introduction: The purpose of the present investigation is to evaluate the epidemiology of water sport injuries at a coastal tertiary trauma center and determine the association of these activities with spinal column injury and if aquatic trauma injuries differ significantly from terrestrial. Methods: All patients admitted to our trauma service from 2006-2011 served as our study population. Patients were included for analysis in the case group if they were recorded as a trauma alert injured while engaged in a water sport activity. Patients were identified from a prospectively collected database, and data was retrospectively reviewed for statistical analysis. A control group of patients was matched to our study population and all were injured while engaged in non-aquatic activities on a terrestrial environment. Results: 105 patients met inclusion criteria for analysis. Cervical injuries (32.4%), accounted for the majority of injuries. 15.2% of patients sustained a cervical spinal cord injury. 7 had significant closed head injuries compared with 2 in the control group. 56 of the aquatic patients had spinal column injuries compared with 11 in the control group. Of these, 17 patients in the aquatic group and 1 in the control group had significant spinal cord injuries. Conclusion: Our data demonstrates the high incidence of spinal column and cord injuries in this patient population relative to controls. Orthopaedic surgeons who care for trauma patients near an aquatic environment should be aware of the high prevalence of these injuries, with proper spinal cord preservation protocols in place to optimize outcome.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37355

**LOCAL APPLICATION OF STRONTIUM LEADS TO ACCELERATED
HEALING OF SOFT TISSUE TENDON GRAFT IN ACL
RECONSTRUCTION**

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Introduction: It was hypothesized that Strontium led to accelerated healing of Strontium enriched calcium phosphate cement (Sr-CPC) treated soft tissue tendon graft within the bone tunnel in Anterior Cruciate Ligament (ACL) Reconstruction. This hypothesis was tested in a rabbit ACL reconstruction model using Achilles tendon allograft. Method: Thirty bilateral ACL reconstructions were performed in 15 rabbits. The graft on the tested limb was treated with Sr-CPC, while that on the contralateral limb was treated with CPC. 3 animals were sacrificed for histomorphometric analysis at 3, 6, 9, 12 and 24 weeks after the index operation respectively. Histomorphometric analysis of the healing of graft was done in 42 histological zones per animal using a scoring system of 0 to 9. The data were analyzed by Mann-Whitney U test. Result: Accelerated healing of the graft within bone tunnel was noted in the Strontium treated limb at 3, 6, 9 and 12 weeks after the operation ($p < 0.001$) when compared with the CPC treated limb. Complete healing of the graft by Sharpey fiber formation at 9 weeks and early evidence of remodeling into normal ACL insertion site at 12 weeks were noted in the Sr-CPC group. The healing of the graft in the CPC treated limb were noted three to six weeks slower than the Sr-CPC group. Conclusion: Strontium is the main contributing factor leading to accelerated healing of Sr-CPC treated soft tissue tendon graft in a rabbit ACL reconstruction model.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38304

**SAFETY AREA FOR TRANSHUMERAL BEATH PIN IN
ARTHROSCOPIC BICEPS TENODESIS WITH INTERFERENCE
SCREW: A RELATIONSHIP WITH AN AXILLARY NERVE**

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Introduction: Biceps tenodesis will preserve biceps strength, especially in young and higher demand patients who have biceps pathology. Supraperectoral biceps tenodesis with interference screw has superior biomechanics. Drilling beath pin through humerus may injury to the posterior structure and the axillary nerve in some directions. Objective: Evaluated safety area for beath pin insertion and its relation to the axillary nerve. Methods: 16 emblamed cadavers were dissected, exposed LHB , pectoralis major tendon and axillary nerve. After released transverse humeral ligament, LHB was cut and reflected. Beath pins were drilled from anterior to posterior in 4 difference locations; mid bicipital groove, lower end of bicipital groove, mid-half between lower end of bicipital groove and superior border of pectoralis major tendon insertion and superior border of pectoralis major tendon insertion. Using digital caliper measured the distance of beath pins on the posterior humerus to the axillary nerve. Results: Average distance of different locations of beath pin to the axillary nerve were; mid bicipital groove 37.15 mm, lower end of bicipital groove 29.43 mm, mid-half between lower end of bicipital groove and superior border of pectoralis major tendon insertion 18.19 mm and superior border of pectoralis major tendon insertion 3.94 mm. Beath pins were penetrated through the axillary nerve in 3 shoulders in the last location. Conclusion: For supraperectoral biceps tenodesis the beath pin should be placed between bicipital groove to mid-half between lower end of bicipital groove and superior border of pectoralis major tendon insertion in order to avoid axillary nerve injury.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38118

**ARTHROSCOPIC REMPLISSAGE FOR THE TREATMENT OF
ANTERIOR GLENOHUMERAL INSTABILITY WITH HILL-SACHS
DEFECTS**

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Humeral head defects appear in between 5% and 75% of patients with recurrent shoulder instability. These Hill-Sachs lesions can be large and engaging on the anterior glenoid and usually result in glenohumeral instability. The purpose of this study is to evaluate the early results of arthroscopic remplissage with Bankart repair for recurrent anterior shoulder instability due to associated bankart lesion with large and engaging (>25% involvement) humeral Hill-Sachs defects. Patients and Methods: 36 patients underwent arthroscopic Bankart repair with remplissage technique for the treatment of recurrent anterior glenohumeral instability with large and medial Hill-Sachs defects. Preoperative imaging in all patients identified Bankart lesion with an associated Hill-Sachs defect that involved greater than 25% of the humeral head. Rowe score was used to clinically assess the patients. Results: all the patients were male. The mean age of the patients was 25.6 years. The mean follow-up period was 18.2 months (range, 15.7 to 24.3 months). At final follow-up, 1 patient reported recurrence of instability in the form of subluxation with spontaneous reduction. The mean Rowe score was 94.5 (stability, 45.5 of 50; function, 26.4 of 30; Motion, 18.1 of 20). Conclusions: Arthroscopic remplissage technique with Bankart repair offered satisfactory results and considered an effective, safe and reliable procedure for treatment of glenohumeral instability in cases with large and medial Hill-Sachs defects.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38143

**ACROMIOCLAVICULAR REPARATION WITH
CORACOCLAVICULAR DOUBLE LOOP AND
ACROMIOCLAVICULAR LIGAMENT TRANSFER: ARTHROSCOPIC
TECHNIQUE.**

Maria TUCA, Felipe TORO, Michelle SACRE

Clinica Alemana - Universidad del Desarrollo, Santiago (CHILE)

Objective: report the experience of arthroscopic reparation after acromioclavicular (AC) injuries. Methods: series of 15 consecutive patients, aged between 18–40 years old, who consulted after suffering an acute traumatic AC injury grades III, IV or V according to Rockwood's Classification. Patients with concomitant shoulder fractures or previous surgeries around the shoulder were excluded. Arthroscopic reparation was performed by the same surgeon in all cases, using 3 arthroscopic portals. The technique has 3 consecutive steps: 1) intraarticular view, oriented towards diagnosis of associated lesions (rotator cuff and labrum), and identification and preparation of the coracoid's base. 2) subacromial space view, for identification and release of the coracoacromial ligament. 3) subclavicular view for subcoracoid and transclavicular passing of suture loops and final fixation. All patients were operated between days 1–10 after injury, and discharged 24hrs later. Follow-up included 2-plane control xrays 3 months after surgery. Results: Arthroscopic repair was performed in a range of 60–90 minutes in all patients. One patient had a concomitant injury, which corresponded to a labrum tear (Slap II) that was repaired in situ. In all cases, arthroscopic repair was completed without incidents. Only one patient had an infectious complication of the wound, which required surgical debridement. Postoperative x-rays showed intact reduction in all patients after 3 months, except for one that had a 2mm vertical migration of the clavicle. Conclusions: arthroscopic repair of AC injuries results comparable to open repair results, with the advantage of a better cosmetrical outcome and the chance of identifying and treating concomitant lesions.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38367

**IS LIMITED DISTAL CLAVICLE EXCISION SUPERIOR TO
CONSERVATIVE TREATMENT OF ACROMIOCLAVICULAR JOINT
OSTEOARTHRITIS THAT CAUSES SHOULDER IMPINGEMENT?**

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⁴Radiodiagnostic Department. Antalya Memorial Hospital, Antalya
(TURKEY)

Acromioclavicular (AC) joint osteoarthritis can cause shoulder impingement. The initial treatment of AC joint osteoarthritis that cause outlet impingement syndrome is nonoperative. But patients who had persistent to conservative treatment require operative intervention. The aim of the current study was to compare long term follow up results of two treatment modalities of AC joint osteoarthritis which might cause of shoulder impingement syndrome. A total of 84 (37 men, 47 women) patients between the years of 2008-2012 with AC joint arthritis were retrospectively analyzed. According to treatment strategies patients were conducted in to two groups. 53 patients (25 male, 28 female) were treated in a conservative manner while 31 patients (12 male, 19 female) underwent limited surgical open excision of distal clavicle. All patients were evaluated by using Visual Analogue Scale (VAS) and UCLA scale (University of California Los Angeles) either before treatment/ operation or final follow-up period for pain and function results respectively. The mean post treatment/operation VAS score was statistical significantly lower in surgical treated group when compared with conservative treatment (P=0, 0001). Furthermore, the mean UCLA score was significantly higher in this group of patients at the final follow up period (p=0, 0001). Our midterm follow up (mean 28 months) results showed that limited distal clavicle excision (0,5 cm distal end of clavicle resection with preserving inferior capsule , and coracoclavicular ligament) was superior to conservative treatment of AC joint osteoarthritis.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36713

**ANTERIOR CRUCIATE LIGAMENT AND ITS RELATION TO
ANTERIOR HORN OF LATERAL MENISCUS: AN MRI BASED
MORPHOMETRIC STUDY IN INDIAN PATIENTS.**

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Delhi (INDIA)

Introduction: Anterior Horn of Lateral Meniscus (AHLM) has been described as potential intra-operative landmark for tibial tunnel placement during Anterior Cruciate Ligament (ACL) reconstruction. This study aimed to investigate the utility of AHLM as a reliable landmark. Methodology: Knee MRI of 55 patients (mean age -36 years) obtained. Using software, Antero-Posterior (AP) distance between center of ACL tibial insertion and posterior margin of AHLM in sagittal plane was measured, after superimposing the two points. The measurement was made by two blind independent observers. Results: The center of ACL lied anterior to the posterior margin of AHLM and the mean distance between them was measured to be 2.52 ± 1.23 mm with wide variability. (Range : -0.45 to 5.04 mm). Negative result (-0.45 mm) implied that center was ACL was posterior to the posterior margin of AHLM. Only 60% of subjects in the study lie in the range '2 mm – 4mm' as the distance between posterior margin of AHLM and center of ACL. 40% of the subjects lie outside this range. High inter-observer reliability (ICC- 0.968) was obtained for the measurement. Conclusions: It was concluded that AHLM cannot be advocated as a reliable intra-operative landmark for tibial tunnel placement during anatomic ACL reconstruction.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36737

**SAFE MINIMALLY INVASIVE POSTERIOR APPROACH FOR
AVULSION OF THE POSTERIOR CRUCIATE LIGAMENT**

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Purpose: show a safe and minimally invasive posterior approach to repair an avulsion of the posterior cruciate ligament. Methods: we adopted the approach in 31 patients. All patients were diagnosed with PCL injury, 27 male and four female patients. All patients underwent CT scan, MRI and clinical examination aimed to highlight the necessity for repair or reconstruction of the PCL. Eleven male patients and 4 female patients were diagnosed with avulsion fracture, inferring the need for repair of the PCL while the other 16 male patients had the PCL ruptured, corroborating the reconstruction in this last group. Results: in all patients the approach showed to be safe and minimally invasive. In all cases we exposed satisfactorily the avulsion bed of the PCL and we had safety to the neurovascular bundle. We have excellent functional and cosmetic outcomes in addition to providing excellent exposure of the lesion allowing the best placement of the screw in the fixation of the fragment. Conclusions: the approach technique had a great reduction in operative time and no cases of injury to noble structures associated with the good final aesthetic result encourage its employment. The safe minimally invasive posterior approach has been employed as standard approach for treatment of avulsion fracture of the PCL and sometimes when we use the quadricepsal graft. Clinical Relevance: our technique is simple, safe, and inexpensive. It can be easily used in all similar cases and will contribute to the PCL repair or reconstruction.

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37954

**DOES DEBRIS IN ANTERIOR CRUCIATE LIGAMENT
RECONSTRUCTION REALLY MATTER? A REVIEW OF CURRENT
LITERATURE AND A COHORT STUDY FOR A PROTOCOL FOR
BONE DEBRIS DEBRIDEMENT**

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Background: The purpose of this study was to determine whether a systematic protocol for debridement and evacuation of bone debris during Anterior Cruciate Ligament (ACL) reconstruction reduces the presence of such debris on post-operative radiographs. Methods: A 5-step protocol for removal of bone debris during arthroscopic assisted ACL reconstruction (ACLR) was designed. It was implemented in 60 consecutive patients undergoing ACLR (Group 1), and high quality digital radiographs were taken post-operatively in each case to assess for the presence of intra-articular bone debris. A control group of 60 consecutive patients in whom no specific bone debris protocol was used (Group 2) and their post-operative radiographs were also checked for the presence of intra-articular bone debris. Results: The protocol used in this study is effective in decreasing the amount of bone debris seen on post-operative radiographs Debris was far less common when the protocol was used, occurring in 15% of patients, compared to 69% when the protocol was not used ($p < 0.001$). Furthermore, the systematic protocol proposed did not significantly increase either the operative or tourniquet time. Conclusions: Following a systematic protocol for bone debris removal during arthroscopic assisted ACLR resulted in a significant decrease in residual bone debris seen on high quality postoperative radiographs. The advantage of this method is that is simple and easy and implies the use of a common tool (shaver) that is universally used during ACLR procedures. Level of Evidence: Level II

Date: 2014-11-20

**Session: Sports Medicine: Short Oral Presentations Sports
Medicine**

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 36970

**FUNCTIONAL OUTCOME OF STRAIGHT VS OBLIQUE INCISION IN
ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION
SEMITENDINOSUS AND GRACILIS TENDON GRAFT HARVESTING**

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general hospital, Mumbai (INDIA)

Damage to the infrapatellar branch of sephanous nerve and subsequent loss of sensation and neuropathic pain is common during graft harvesting for ACL reconstruction .It is believed that a oblique incision along the course of the nerve may help to reduce the incidence of nerve injury. In present study we have done a comparative study of 20 cases [Group A-straight incision (n=10) and Group B-oblique incision (n=10)] and evaluated general disability in the post operative patients after 4 week. Consecutive twenty patient admitting to Dr. R.N. Cooper Hospital for anterior cruciate ligament tear was taken in study after satisfying inclusion and exclusion criteria, giving informed consent. Two groups were made and alternatly patient was allotted to respective group. Group A underwent reconstruction of anterior cruciate ligament by semitendinous and gracilis tendon graft harvesting via straight incision and Group B via oblique incision. Subsequently level functioning was assessed after 4 weeks by WHO Disability assessment scale 2.0 (WHODAS). Analysis was done using statistical package for social sciences 18.0 (SPSS Chicago, illionos). Our result shows that group receiving straight incision have higher score on WHODAS indicating higher general disability, while group receiving oblique incision have lower scores on WHODAS indicating lower general disability. Concluding Outcome of straight incision is better than oblique incision in anterior cruciate ligament reconstruction semitendinosus and gracilis tendon graft harvesting.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38477

**STERNOCLAVICULAR JOINT DISORDERS AFTER
GLENOHUMERAL STABILIZATION SURGERY**

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Vincenzo VERDEROSA, Matteo MANUNZA, Giacomo GIACHETTI
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Several complications can occur after surgical shoulder stabilization including stiffness, loss of strength, function and pain. Stiffness and loss of motion in glenohumeral joint may be compensated by a hypermobility of the shoulder girdle. The sternoclavicular joint (SCJ) plays an important role in the complex of the scapular girdle. The SCJ is not structured in order to complete great workloads and tends to hypermobility or instability when exposed to overload, becoming painful. The purpose of this study is to define a possible correlation between iatrogenic glenohumeral stiffness and a long-term sternoclavicular joint instability. Of 42 eligible patients who had undergone open or arthroscopic surgery in our clinic from 2000 to 2004, 20 (16 males and 4 females; mean age 37 years, range: 29-40) were retrospectively evaluated (10 years, range 8-12 years). Primary outcomes were shoulder stiffness and SCJ disorders. Secondary outcomes were scapular dyskinesia and shoulder scoring scale. The majority of subjects (eleven out of twenty) exhibited the condition under study: association of glenohumeral stiffness (extrarotation deficit) and SCJ disorders(pain/tenderness, swelling/subluxation, popping). Concluding there are several clinically relevant complications associated with shoulder instability surgical repair. We are not aware of any studies that investigate the possible correlation between sternoclavicular joint disorders and iatrogenic stiffness of the glenohumeral joint. Since the majority of subjects in this study exhibited the condition under study, this observational study may preliminary suggest such association but our series is definitely too limited to draw any definitive conclusion and further studies are required.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37628

A DOUBLE INCISION, MINIMALLY INVASIVE APPROACH TO SURGICAL STABILISATION OF THE ACROMIO-CLAVICULAR JOINT

Thomas Patrick BURKE, Gandhi Nathan SOLAYAR, Thomas Kenneth KAAR

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Disruption of the acromioclavicular joint (ACJ) represents about 3-5% of shoulder girdle injuries. The optimal surgical approach for chronic symptomatic acromioclavicular joint separation (ACJ) remains an issue of much debate. Most approaches adopt a single, extended incision which may compromise the deltoid and pectoralis muscle attachments to the clavicle. In this article, we describe a minimally invasive, muscle sparing technique using synthetic graft material for ACJ stabilisation. The preoperative preparation, site of incisions, coracoid instrumentation and fixation technique are illustrated with the aid of intra-operative clinical photographs and video segments. The method of safely circumventing the coracoid process and thus protecting adjacent neuro-vascular structures is described in detail. This minimally invasive, double-incision technique is a promising operative approach for surgical reconstruction of the acromio-clavicular joint.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38056

BIOMECHANICAL EVALUATION OF THE RESISTANCE OF THE CORACOID PROCESS AFTER MAKING BONE TUNNELS OF 4.0 AND 6.0 MM IN DIAMETER CENTERED ON THE BASE AND 4.0 MM BONE TUNNELS IN FOUR DIFFERENT LOCATIONS.

Joel MURACHOVSKY, Roberto IKEMOTO, Luis Gustavo NASCIMENTO, Rogerio BUENO, Luis Henrique ALMEIDA, Guilherme VIEIRA LIMA

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Introduction: Most of acromioclavicular (AC) joint injuries involves damage to the coracoclavicular ligament (CCL). Some techniques for CCL reconstruction using a tunnel made in the coracoid process (CP), which can increase a risk of fracture. The aim of this study is to evaluate the differences in the biomechanical properties of the coracoid process (CP) using bone tunnels centered at it's base and in four different locations. Methods: Thirteen pairs of scapulas from cadavers were selected for drilling a 4.0 mm tunnel in the coracoid on one side and a 6 mm on the contralateral. A second round tests with six pairs of scapulas were performed at four different locations at the CP, centric and eccentric at the base and at the body. The sample underwent traction to failure and data were analyzed. Results: The 4.0 mm holes bore greater ultimate load and a greater energy absorbed at the ultimate load than 6mm. No statistical difference in the yield load, energy absorbed and stiffness was found as well as between base centered and distally centered. There weren't differences between the base-centered and base-eccentrics. However, the distal eccentric had a lower load fault at the ultimate load and lower energy absorbed than the distal centered ($p<0.05$). Conclusion: A tunnel of 4.0 mm may result in reducing the risk of fracture of the CP for "Endobotton" fixation during CCL reconstruction compared 6.0 mm, small deviations from the central distal tunnel will result in significant changes in the resistance.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37371

STRESS DISTRIBUTION PATTERNS IN NON-DOMINANT VERSUS DOMINANT SHOULDERS OF BASEBALL PLAYERS USING COMPUTED TOMOGRAPHY OSTEOABSORPTIOMETRY

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Introduction: The chronic mechanical stresses related to overhead throwing increase the risk of the development of a variety of shoulder disorders in the throwing athlete; among those disorders shoulder instability has been identified as the primary abnormality. Thus, unique balance between shoulder mobility and stability is needed for throwing. In this study we aimed to characterize the distribution of subchondral bone density across shoulder joint in non-athletes and baseball players; and to identify the alterations in the pattern of distribution of subchondral bone density.

Methods: This study was approved by our institutional review board. Computed tomography images obtained from 27 men; 6 controls, 11 baseball pitchers, 5 fielders and 5 catchers. Using computer software quantitative analysis of the mapping data focused on the location of high-density regions around the glenoid cavity. The percentage of high-density region (%HDR) was calculated; then inter-group and intra-group statistical comparisons done. Data analyzed using one way ANOVA followed by Tukey's test with $P < 0.05$ considered significant.

Results: Bilaterally the total %HDR in pitcher, catcher and fielder groups were significantly higher than in control group ($P < 0.05$). Intra-group comparisons of the %HDR showed significant differences only between the non-dominant and dominant limbs of the pitcher and fielder group ($P < 0.05$). Among baseball players there were no significant differences in the %HDR between the pitcher, catcher, and fielder groups.

Conclusion: In throwing athletes stresses exerted on the shoulder increase significantly on both non-dominant and dominant upper limbs with an overall increased stresses compared to the non-athletes.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38052

A NEW METHOD OF EVALUATE GLENOID EROSION IN INSTABLE SHOULDER

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Objective: to establish values and parameters using three dimensional reconstruction of Axial Computerized Tomography (CT) in order to quantify erosion of the glenoid cavity in instability of the shoulder Method: We studied two subject groups using computerized tomography. Group I were normal and Group II subjects had shoulder instability. We measured values of the vertical segment, the superior horizontal, medial and inferior segments, and also calculated the ratio of the horizontal superior and inferior segments of the glenoid cavity in both normal subjects and those with shoulder instability. These same parameters were recorded during arthroscopy for cases with shoulder instability. Results: the mean values for these measurements were 40.87mm, 17.86mm, 26.50mm, 22.86mm and 0.79, respectively, in normal subjects. For subjects with unstable shoulders the mean values were 37.33mm, 20.83mm, 23.07mm and 0.91. Arthroscopic measurements yielded an inferior segment value of 24.48mm with a loss of 2.39mm (17.57%). Conclusions: Computerized tomographic measurements with three dimensional reconstruction of the glenoid cavity yielded reliable values consistent with those in the literature. The ratio between the superior and inferior segments of the glenoid cavity was 0.79. This value can be used as a normative value for evaluating degree of erosion of the anterior border of the glenoid cavity. However, values found using Axial Computerized tomography should not be used on a comparative basis with values found during arthroscopy.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38045

RESULTS OF THE MARGIN CONVERGENCE OF THE POSTERIOR CUFF TO THE BICEPS TENDON

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Objectives: To assess the outcomes of the arthroscopic margin convergence of the posterior cuff to the biceps tendon. Methods: From october 2003 to december 2007, 19 patients with massive rotator cuff tear which included the rotator interval were treated with arthroscopic margin convergence of the posterior cuff to biceps tendon. Seventeen patients were female and 5 were male. The mean age was 58 years old. The dominant side was affected in 16 cases. The preoperative onset of pain was, on average, 33 months. The outcomes were analysed according to the UCLA Score with a minimum follow-up period of two years. The relationship between fatty infiltration and pre operative pain period with the outcomes was study by the Spearman correlation test and the Wilcoxon test was used to compare the pre and post operative range of motion, as well as, the UCLA score. Results: The mean improvement of forward flexion was 33o ($p<0,001$), but only 3o of external rotation and two vertebral levels of internal rotation. The UCLA score improved, on average, 14 points ($p<0,001$). Six patients had excellent results; eight good; three fair and two poor results. According to Spearman Correlation test there were no correlation between fatty infiltration and outcomes, but there was a statistical correlation between outcome and preoperative period of pain. Conclusion: The arthroscopic margin convergence of the posterior cuff to the biceps tendon lead to 73,7% of satisfactory results.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38033

THE AXILLARY NERVE RELATIONSHIPS USING THE ANTEROSUPERIOR APPROACH

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Objective: To evaluate the relationship between the axillary nerve and the anterolateral edge of the acromion using the anterosuperior approach described by McKenzie
Methods: Twenty two shoulders were dissected from 11 fresh cadavers (9 males). After finding the axillary nerve we calculated the distance from the anterolateral edge of the acromion to it, the humeral length and the specimens height. The relationship between this distance and the humeral length, as well as, the specimens height, were analyzed by the Spearman Correlation. The Anderson Darling Normality test were used to study whether this distance had a normal distribution and the Student `T` test, to determine any difference between the right and the left shoulders with significance when $P < 0.05$
Results: The humeral length was, on average, 30.30 ± 1.53 cm (Right side) and, on average, 30.45 ± 1.67 cm (Left side). The distance of the axillary nerve in both shoulders was, on average, 5.35 ± 0.62 cm and they had a Normal Distribution. Besides, they increased as the humeral length increased, as well as the specimens height increased. However, only the positive correlation between this distance and the humeral length was significant.
Conclusion: The distance from the anterolateral edge of the acromion to the axillary nerve was, on average, 5.35 ± 0.62 cm in both shoulders. The Spearman Correlation was positive and significant between this distance and the humeral length.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37230

OUTCOME OF ANATOMIC RECONSTRUCTIVE SURGERY FOR THE ELDERLY WITH IRREPARABLE MASSIVE ROTATOR CUFF TEAR

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Reverse shoulder arthroplasty is available for the irreparable massive rotator cuff tear, and the patients at the age of 70 and older are considered as a good indication for this procedure. However, this surgery still has high complication and does not provide external and internal rotation improvement. The purpose of this study is to evaluate the outcome of anatomic reconstructive surgery such as small sized humeral head replacement and rotator cuff repair to treat the cuff tear arthropathy (CTA) in the elderly. Thirty-one shoulders for 31 very old patients at the age of 75 and older (7 men and 24 women) of CTA patients with irreparable massive rotator cuff tear categorized in Hamda I-III classification were eligible for this study. All the patients were followed up for more than 1 year, and their average age was 78.6; follow up term was 20.3 months. Latissimus dorsi tendon transfer was provided for 6 shoulders. Range of shoulder motion was compared between pre and post-surgery and the clinical score was evaluated by JOA score. The result showed that flexion, external rotation and JOA score were significantly improved after the surgery, although internal rotation was comparable between the two groups. These findings suggest that this procedure may enable to acquire both flexion and external rotation even for the elderly.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37673

REVISION ARTHROPLASTY WITH BONE GRAFT OF ANATOMICAL GLENOID LOOSENING IN CEMENTLESS GLENOID IMPLANTS: REVIEW OF 10 CASES WITH A MINIMUM FOLLOW UP OF TWO YEARS

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Introduction Revision of anatomical glenoid component loosening is not yet well defined. We hypothesized that a cementless glenoid implant combined with bone graft for glenoid reconstruction was a valid option of treatment. Material 10 patients with symptomatic glenoid loosening underwent revision surgery with bone graft between September 2007 and January 2010. The rotator cuff was functional. The loss of substance was central fossa in 5 cases, anterior in 4 patients and one patient had a total defect. The reconstruction of the glenoid was obtained using the iliac crest graft (8 patients) or synthetic bone substitute (2 patients). The non-cemented glenoid component was fixed into the glenoid native bone, thus stabilizing the graft reconstruction. The minimum follow up was 2 years. Results The absolute Constant Score showed a mean improvement of 31.6 (from 39.4 to 71 points). Pain decreased from 5.1 to 0.6(0 to 10 points). The gain of anterior elevation was 31°(118°-149°), external rotation was 13° (34°-47°), and two points in internal rotation. SST Score progressed from 3,4 to 7,9. No patient was surgically revised follow-up. The radiographic analysis shows good integration of bone graft, no radiolucent line and no glenoid loosening . Discussion The limits of this study were a short follow-up, a small number of cases and postoperative absence of CTScan. This study suggest that revision with a non-cemented glenoid component associated with a bone graft can solve the difficult challenge of glenoid loosening as long as the rotator cuff is functional .

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38049

REVERSE SHOULDER ARTHROPLASTY: RESULTS AFTER ROTATOR CUFF ARTHROPATHY AND PROXIMAL HUMERAL FRACTURES.

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Objective: To assess the clinical results of total reverse shoulder arthroplasty (TRSA) for the treatment of the rotator cuff arthropathy (RCA) and for proximal humerus fractures (PHF). Method: Between October 2010 and December 2012, 24 shoulders of 24 patients were submitted to TRSA, which 15 were secondary to RCA and 9 cases for PHF. Population of this study was predominantly female (83,3%) and elderly (mean age of 73 years). Post-operative follow up time ranged from 12 to 37 months. The methods elected for assessing the patients during the pre and postoperative period were based on active range of motion of the shoulder, the UCLA scoring criteria, and image exams evaluation, including the use of the Seebauer and Neer classification in the preoperative time. Results: In patients with RCA, 40% were classified as Seebauer II-A. In the case of fractures, 50% had Neer IV proximal humeral fractures. Considering all patients, the mean elevation rose from 68.7 to 114.6 ($p<0,001$), mean external rotation from 22.2 to 23 ($p=0,93$) and the mean internal rotation from L4-L5 vertebrae to L2 ($p=0,009$). The UCLA score increased from 9.3 to 25.6 ($p<0,001$). Improvement of the pain and satisfaction with the surgery were observed in all patients. Complications happened in 16,7% of the patients: one periprosthetic fracture, one fracture of the acromion and two cases of infection of the surgical wound. Conclusion: The TRSA shows promising results in the treatment of RCA and proximal humerus fractures.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37680

CLINICAL OUTCOMES AFTER REVERSE SHOULDER ARTHROPLASTY IN PATIENTS WITH FAILED DELTOID OR LATISSIMUS DORSI TRANSFERS. A REVIEW OF 10 CASES

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Background : Deltoid flap or latissimus dorsi transfer can be an option in retracted postero superior cuff . We report the results obtained from 10 patients who underwent a reverse shoulder arthroplasty (RSA) after failure of either a deltoid and/or latissimus dorsi flap. Material and methods : A retrospective study of 7 women and 3 men with a mean age 68 years with a minimal follow up of 2 years. 5 deltoid muscle transfer , 4 latissimus dorsi transfer and one combined had been performed for painful retracted rotator cuff tear. The delay between RSA and tendon transfer was mean 2 years. All the patients had a passive complete range of motion preoperatively with no hornblower sign. Radiographically :7 eccentric humeral head (Hamada III) and 3 eccentric osteoarthritis (Hamada IV). Results : Absolute Constant score increased from 25.8 to 62.8 post operatively. All the factors were improved , particularly active anterior elevation increased from 69° to 134° with 6 patients satisfied and 4 very satisfied and a gain of 10 points (VAS) with respect to pain. Simple shoulder test increased from 2 to 10. No complication except one transitory paresis of the brachial plexus. No difference was found after failed deltoid or latissimus dorsi flap. Discussion and conclusion : The absence of the anterior part of the deltoid is not a contraindication for RSA. Results are similar to primary RSA. RSA is a salvage procedure to decrease the pain and to restore an active anterior elevation

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38466

ANTERIOR TRANSPOSITION OF THE ULNAR NERVE AT THE ELBOW BY V-Y LENGTHENING IN COMPRESSION ULNAR NEURITIS

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(GREECE)

Introduction:The authors had the opportunity to treat 75 cases of the ulnar neuritis with a method of professor Sakellarides. Method:By doing V-Y lengthening of the origin of the flexors near the medial epicondyle. Operating 75 cases with the above method, we had no complications neither from the nerve: dissesethisias, pain, nor from the cosmetic appearance of the skin. Our patients were 52 females and 23 males. The results were as follows: 75% excellent 25% good We had no fair results and no failure. We think this method is very good treating compression ulnar neuritis, especially in previous failure operations.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38432

COMPLICATIONS AND RECURRENCES FOLLOWING ARTHROSCOPIC RESECTION OF VOLAR WRIST GANGLION IN 30 WRISTS

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Introduction: The volar wrist ganglion is the second most common mass of the wrist. Despite a natural history of spontaneous regression, a volar ganglion of the wrist sometimes requires surgical excision. Arthroscopic resection of a volar wrist ganglion was originally described by Ho et al. **Material and Methods:** Between 2007 and 2012, we performed 30 arthroscopic resection of volar wrist ganglion (ARVWG). We use the surgical technique, in which a small palmar capsulectomy is performed at the interval between the radioscapocapitate (RSC) and long radiolunate (LRL) ligaments, or between LRL and short radiolunate (SRL) ligaments (Ho et al, 2003). Twenty-three patients were female and seven were male. The average age was 38 years. We used the Allen test post-operatively and did not observe failure of blood to diffuse back into the hand after ARVWG. **Results:** We did observe transient paresthesia of the superficial radial nerve and spontaneous regression in one patient, two volar hematomas, and one case of recurrence. One patient had a volar radiocarpal ganglion confirmed by the ultrasonographic examination, but the procedure was converted to open surgery once the mass was confirmed to be a lipoma. **Discussion:** The optimal treatment for volar wrist ganglia is still unclear. One prospective, randomized study in which the authors compared complications and recurrences, they concluded that ARVWG has less post-operative morbidity and a better cosmetic result when compared with the open procedure. **Conclusion:** We believe that ARVWG is a safe technique with low rates of complications and recurrence.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38252

METASTASES TO THE HAND AND WRIST: AN ANALYSIS OF 221 CASES

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Purpose To identify demographic trends, survival rates, the most common metastatic locations, and the most common primary malignant tumors in the reports of hand and wrist metastases published over the past 27 years. **Methods** A keyword search was performed across PubMed, Google, Science Direct, and Springer databases with a time-range restriction set between April 1986 and April 2013. A total of 193 articles were located describing 221 patients. The data were analyzed for patient age, sex, known history of malignancy, primary tumor site, histological diagnosis, metastatic location, hand involvement, and survival rates. **Results** Lung, gastrointestinal tract, and kidney malignancies were the 3 leading metastatic tumors. The mean age among patients was 61 ± 13 years, and involvement among men was almost twice as common as among women. The mean survival from the time of the diagnosis was 7 ± 7 months. There were no predilections for either the right or the left hand. The distal phalanx was the most frequently involved bone, and the thumb was the most frequently involved digit. **Conclusions** The frequency of published hand and wrist metastasis has increased dramatically within the last decade. Metastases have been reported for every bone of the hand and wrist as well as for the soft tissues. Compared with the previous studies, the mean age of reported patients has slightly increased even though the mean survival time has not changed

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37252

CORRELATION OF THE SEVERITY OF HAND INJURIES AND FUNCTIONAL OUTCOME: A PROSPECTIVE STUDY

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Introduction: The functional outcome of mutilating injuries of hand cannot be fully anticipated at the time of injuries and it depends upon many factors but most importantly on severity and management of original hand injury. We did a prospective study to see if there is correlation between the hand injury severity score (HISS) and functional outcome of hand injury as measured by Disability of Arm, Shoulder and Hand score (DASH) by means of a prospective study. Materials & Methods: The study included 41 patients (age range 11 to 64 years old) of hand injuries who met the study criteria. The hand injuries were scored according to the HISS and treatment was given according the standard guidelines. The outcome was assessed 6 months after completion of treatment using DASH score. Initial and outcome scores were compared by Pearson's correlation method. Results: 15 cases (36.58%) were under minor category of hand injury severity score, 9 cases (21.9%) were moderate, 10 cases (24.39%) were major and 7 cases (17.07%) were under severe category. Mean DASH score were 0.7 in minor category, 2.87 in moderate category, 9.56 in major category and 25.36 in severe category. The Study shows a statistically significant association between HISS and DASH score ($r=0.9649$, $p=0.000$). Conclusion: In our study we found the severity of initial injury correlates with functional outcome. However large-scale study is required to validate the present study result. Vascularity should be taken in account while calculating hand injury severity score.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38137

CAN SCAPHOID FRACTURE NON-UNION BE AVOIDED? A UK STUDY

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Introduction: Scaphoid fracture non-union remains prevalent in a young male working group requiring surgical intervention with a significant impact on employment. A previous published study looked at factors contributing to the development of non-unions in a Canadian population. The same methodology was applied to a UK group to determine whether early detection and management could be improved. Methods: We performed a retrospective analysis of 70 consecutive patients who had open reduction and bone graft for established scaphoid non-unions. Data was collected for demographic information, pattern of fracture, and initial investigations and management. Results: Of the 70 non-unions, 66% patients sought medical advice for their initial injury, of which only 46% received appropriate management. The remaining 54% did not receive radiographic investigations or did not have an identifiable fracture on initial x-rays. For the 34% patients that did not seek immediate medical advice following their injury, majority (79%) presented later as a new referral with pain +/- stiffness, and 21% presented following a re-injury. Conclusion: Both clinician and patient factors contributed to scaphoid non-unions. There is a strong need for better education, especially via sport coaches and public media. Clinicians need to examine the scaphoid carefully and not rely on apparently normal initial x-rays.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38273

TRAPEZECTOMY AS A FIRST-LINE OPTION IN THE TREATMENT OF RHIZARTROSIS

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Introduction: Rihzartrosis an extremely common condition. The aim of this work was the long-term clinical evaluation of patients with grades III and IV rizartose undergoing trapezectomy. Material and Methods: The authors retrospectively evaluated a total of 46 patients (57 interventions) that underwent trapezectomy with or without ligament suspension between January 1995 and December 2012. All patients were assessed with the Quick DASH score, being further evaluated four parameters: pain, function, mobility and strength. Pain was assessed by visual analogue scale, the function was based on activities of daily living and mobility measured in two planes, radial and palmar abduction. Pinch and grasp were measured using a dynamometer. Results: Using the Quick Dash Scale score was obtained an average result of 45.6 on parameter pain. As for the activities of daily living on average 86% had no difficulties in activities such as pick up coins, write or cut with knife. Mobilities presented were very satisfactory. In relation to the forces the average result of forceps was 4.3kg and the hold of 17.4Kg. There was an approximately 93% satisfaction with surgery. Discussion: The results of this study show good clinical results with the surgical treatment of trapezectomy, demonstrating its ability to significantly restore function, range of mobility and strength, allowing a near-normal functional capacity and pain. Despite the continuing evolution of surgical techniques, trapezectomy remains a first-line option without relevant side effects.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36886

SENSORY FLAP FOR PULP DEFECTS OF THUMB AND INDEX

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The aim is to describe the procedure which provides sensory flap for pulp defects of index and thumb. 15 thumbs and 9 index fingers were subjected for this procedure. Skin flap from distal phalanx along with ulnar neurovascular bundle of middle finger was dissected up to mid palm level , tunneled through the subcutaneous space, brought out through the defect and sutured over the primary pulp defect of thumb or index. Thus excellent sensory and robust vascular padded skin was provided for the pulp loss. 2 point discrimination achieved was average of 7 mm. with normal power and normal movements of the finger. There were no immediate or late complications noticed in the procedure. Operation though little difficult to perform, provides sensory skin for pulp loss of thumb and index which is essential for the patients who are skilled workers, musicians, painters, artists and most important for the blind persons who read brail. The procedure is recommended in selective cases to cover pulp defects of thumb or index finger when other simpler methods are not feasible.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37231

TO DEFINE SAFE CORRIDORS FOR K WIRING IN PHALANX FRACTURES TO ACHIEVE GOOD FUNCTIONAL OUTCOME

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Unstable phalangeal fractures are treated with K wire fixation. The technique of K wiring in phalangeal fractures was not standardised. The aim of our study was to define the safe corridor for K wire fixation in phalanx fractures of different geometry, to achieve maximum range of movements without much impalement of soft tissues. Cadaveric study was done to map the safe portals for K wire entry in proximal, middle and distal phalanx and the same was implemented clinically in 50 patients with 64 phalanx fractures with inclusion and exclusion criteria. 38 proximal, 14 distal and 12 middle phalanx fractures were treated. 30 patients had transverse fracture. Regional block and "'on table active finger movement test' were done in all patients to assess the tethering of soft tissues. The results were analysed using radiology, Belsky's criteria grading and Disability of Arm, Shoulder and Hand (DASH) score. All were followed up for a period of 12 to 18 months. 48 patients achieved excellent score and 2 with good score (one had pin tract infection and one had terminal stiffness). Our best results prove the importance of the safe corridor usage in performing K wire, which are mapped for each phalanx in flexion and extension position. There is a direct correlation between demonstration of active full range of motion (on table test) and to the final outcome.. This is a very valid test need to be performed to know the placement of K wire in the safe corridor.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36855

BIOMECHANICAL CHARACTERISTICS OF SUTURE ANCHOR IMPLANTS FOR FLEXOR DIGITORUM PROFUNDUS REPAIR

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Introduction: Avulsion of the flexor digitorum profundus tendon (FDP) requires a strong repair technique in order to allow early motion postoperatively. In vitro biomechanical testing was performed on two suture anchor implants to determine strength and failure characteristics during passive mobilisation protocol simulation. **Materials and Methods:** Avulsion of the FDP tendon was simulated in 30 distal phalanges from fresh frozen human cadaver specimens. Repair was performed with a Micro-Mitek 1.3 x 3.7mm (# 3/0 Orthocord) and a Corkscrew 2.2 x 4 mm (# 2/0 FiberWire). All specimens were loaded cyclically from 2 to 15 N at 5 N/s, for a total of 500 cycles. Samples were tested to failure at the completion of 500 cycles. Load at failure, load at first significant displacement (>2mm), elongation of the system, gap formation at the tendon–bone interface and the mechanism of failure were assessed. **Results:** Suture failure at maximum load was the prevalent failure mechanism in both groups. No statistically significant difference in elongation of the tendon-suture complex was observed. The Corkscrew suture anchor showed a significantly superior performance in load to failure, load at first significant displacement and gap formation at the tendon–bone interface. **Conclusion:** The significantly higher load capacity at the first displacement (>2mm) and the significance of a lower gap formation at the repair site seem to be the clinically most relevant parameters. Based upon this concept, the Corkscrew anchor may be superior biomechanically to the Micro-Mitek when considering an early passive mobilization protocol.

Date: 2014-11-20

Session: Trauma: Short Oral Presentations Upper Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38066

INTEGRATED APPROACH TO THE TREATMENT OF PATIENTS WITH INJURIES AND DISEASES OF THE UPPER LIMB BY TRANSOSSEOUS OSTEOSYNTHESIS

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Introduction: High frequency of diseases and injuries of upper extremity, complexity of treatment and considerable percentage of unsatisfactory results create social and medical importance of the problem. The progress in surgical developments allowed for improving of functional possibilities for self-services thanks to the method of controlled transosseous osteosynthesis. Method and material: The present work is based on the experience of treatment of 941 patients (1186 segments and joints) with open and closed injuries and diseases of congenital and acquired etiology, aged 1,2 years to 76 years. Pathologies located in shoulder girdle, shoulder, forearm, arm and joints of upper limb. All patients had severe degrees of injuries: different kinds and localizations of fractures, joint injuries, mal-united fractures, limb shortenings, deformities, pseudoarthroses, defects and contractures of joints. 27,3% of injuries had a concomitant character. 86% of patients were operated on several times, which resulted in vivid scar changes (38,1%) and osteomyelitis complications (23,5%). The functional mobility limitation increased the number of patients with joint contractures (47%). The tactic of patients' treatment was based on individual approach, depending on etiology of disease, character and complication of preceding treatment, condition of tissues and function of joints. Results: In all cases we were able to obtain good anatomic, functional and cosmetic treatment result: good: 95,8%, satisfactory – 4,2%. Conclusion: Thus, multifunctional character of Ilizarov device and its different modifications, possibility for gradual correction, sparing regimen of treatment by the method of transosseous osteosynthesis allows for achieving of the treatment task.

Date: 2014-11-20

Session: Hip: Short Oral Presentations Hip

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 36708

20 YEARS FOLLOW UP STUDY OF CEMENTED TOTAL HIP ARTHROPLASTY.

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

Date: 2014-11-20

Session: Hip: Short Oral Presentations Hip

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 36856

MANAGEMENT OF SEGMENTAL ACETABULAR DEFECTS BY STRUCTURAL AUTOGRAFT IN PRIMARY CEMENTLESS TOTAL HIP REPLACEMENT

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Background: Acetabular defects in primary hip arthroplasty represent a challenging problem adding difficulty to the usually straightforward procedure. One logical and biological solution is structural autograft. Patients and methods: This is a retrospective analysis of cases managed in the Orthopaedic Surgery department of our university hospital. 21 patients (12 men) undergoing 23 primary cementless total hip arthroplasty (2 bilateral) had reconstruction of acetabular defects between January 2008 and December 2011. All defects were AAOS Type I. The preoperative diagnosis was hip dysplasia (5 cases), osteoarthritis (7 cases), rheumatoid arthritis (3 cases), sero-negative arthropathy (3 cases), post-acetabular-fracture (4 cases), and conversion of a bipolar prosthesis to a total hip replacement (1 case). Structural autografts were used in conjunction with cementless acetabular cups. The graft was obtained from the femoral head in all cases except two where it was obtained from the iliac crest. The graft was fixed with AO screws. The mean age of the patients was 50.8 years. The mean follow-up was 32.8 months. Radiographic analysis was performed to assess graft incorporation, component migration, and bone-implant radiolucencies. Results: All grafts were well-incorporated radiographically. Mean resorption as measured on AP pelvis X ray was 1mm . All acetabular components were stable at the final follow up without evidence of loosening. The mean Harris hip score improved from 43.1 preoperatively to 89.7 postoperatively. There were no major complications during the period of follow up. Conclusion: Structural autografts could be successfully used to reconstruct acetabular defects in primary cementless total hip arthroplasty.

Date: 2014-11-20

Session: Hip: Short Oral Presentations Hip

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 36888

UTILIZATION OF ANATOMIC PELVIC LANDMARKS FOR ACETABULAR COMPONENT PLACEMENT IN TOTAL HIP ARTHROPLASTY

Guydo MARQUES HORTA DUARTE

HOSPITAL GOVERNADOR ISRAEL PINHEIRO, BELO HORIZONTE (BRAZIL)

INTRODUCTION: Hip dislocation following total hip replacement (THA) has a reported incidence ranging from 0,5% to 9,2%. In most reported series they occur within the first 4-6 weeks after surgery. The poor orientation of the acetabular component (AC), mainly the anteversion, is the most significant etiological factor of hip dislocation after THA. Several authors have reported the incidence of poor orientation of the AC. Techniques employing external reference guides are subjected to inaccuracies. Anatomic pelvic landmarks provide a suitable placement. **METHODS:** Between August/2010 and December/2013, 238 THAs were done in 220 patients, 95 males, 125 females, 118 on the right hip and 120 on the left one, mean age of 62,82 years (19,96 - 89,05). All surgeries were done by posterior approach with patients placed on lateral decubitus. Exeter cemented prosthesis (Stryker Orthopedics, Mahwah, NJ), with 28mm femoral heads have been implanted, with contemporary cementing techniques. The preoperative planning was done with appropriate templates. For the AC placement three anatomic landmarks were used, independently of the position of the external guides. These landmarks were the lowest point of the acetabular sulcus of the ischium, the most superior point of the acetabular rim and the transverse acetabular ligament. **RESULTS:** The follow-up ranged from 2,51 to 41,8 months, mean 2,51. Three cases of luxation (1,2%) and 01 case of infection (0,42%) have been occurred **CONCLUSION:** This method has given reliability to the surgeon for the placement of the AC.

Date: 2014-11-20

Session: Hip: Short Oral Presentations Hip

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 36890

TOTAL HIP ARTHROPLASTY WITH HIGHLY CROSSLINKED POLYETHYLENE LINERS IN AN ASIAN POPULATION WITH SMALL ACETABULAR DIAMETERS

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Background: Highly cross linked polyethylene for total hip replacements has improved wear resistance, but less fatigue strength than ultra high molecular weight polyethylene. Thin polyethylene liners may be prone to fatigue failure. We evaluate the radiographic medium term outcomes of total hip replacement using highly cross linked polyethylene. We report head penetration rates in relation to liner thickness, acetabular implant size, cup inclination and age at surgery. Methods: Between year 2000 and 2007, a total of 80 primary total hip replacements were carried out in 64 patients. Baseline and last follow up radiographs were analysed retrospectively using the Kang's modification of the Dorr and Wan method and the 'PowerPoint' method. Results: Mean follow up was 7.5 years. Mean acetabular outer diameter was 50.9mm (range 46 to 58mm) and mean polyethylene thickness was 7.0mm (range 6.2 to 9.3mm). Head penetration rate as per the 'PowerPoint' method was 0.04mm per year. There were no acetabular revisions nor any radiographic evidence of osteolysis. There was no correlation between the femoral head penetration rate with cup size, liner thickness, aetiology, acetabular inclination angle or age at surgery ($p>0.05$). Conclusion: There were no adverse outcomes with the use of thin liners in patients with small acetabular diameters. The low wear rate and absence of sudden mechanical failure in thin highly cross linked polyethylene hip liners is very encouraging.

Date: 2014-11-20

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Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37764

BILATERAL TOTAL HIP ARTHROPLASTY IN PATIENTS WITH JUVENILE RHEUMATOID ARTHRITIS: ANTERIOR APPROACH IS HELPFUL.

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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. Due to systemic nature of disease and bilateral involvement of the hips, bilateral THA may be useful in these patients. Methods: We performed simultaneous bilateral total hip arthroplasty in 11 patients (22 hips) with JRA. The mean age of patients at the time of surgery was 18.4(15--24). There were 7 females and 4 males. All patients underwent THA through direct anterior approach in supine position. Both acetabular and femoral components were cementless. All patients got off the bed on the same day of surgery. Results: At an average follow up of 24 months, all components were stable both clinically and radiographically. The Harris hip score improved from 35 preoperatively to 85 postoperatively on average ($P<.001$). sf-36 showed significant improvement and womac score decreased significantly ($p<0.05$). all patients used walking aid before surgery but only one patient required walking aid after surgery. no patient required blood transfusion. Conclusions: Bilateral THA through direct anterior approach is an good option for patients with JRA and bilateral hip involvement. As far as we know, this is the first report on bilateral THA in patients with JRA through DA approach. This approach will expedite patients' rehabilitation and improvement in quality of life in trade of minimal risk taking.

Date: 2014-11-20

Session: Hip: Short Oral Presentations Hip

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37714

**ANTERIOR APPROACH HIP ARTHROPLASTY (HEUTER):
BENEFITS IN SURGICAL TREATMENT OF DISPLACED FEMORAL
NECK FRACTURES IN THE ELDERLY**

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Introduction: Displaced femoral neck fractures occur mainly in elderly people (>65years) and have devastating consequences for patients/families, because of its mortality (30%) and morbidity. Hip arthroplasty has increasingly been proposed for treatment of these fractures, particularly, in cognitive and functional independent patients. Anterior approach (Heuter) preserves functional hip muscles, defining it as a minimally invasive approach. Recent studies have demonstrated several benefits of this approach in surgical treatment of these fractures. Objective: Evaluate benefits of anterior approach in Hip arthroplasty for displaced femoral neck fractures in elderly people. Methods: Retrospective study conducted from February/2010 to December/2012. We assessed: Age; Sex; Comorbidities; Gardner Classification; Incision length; Time of surgery and hospitalization; Transfusion; Functional outcome (Harris and Oxford Hip Score (HHS/OHS)). Results: 22 patients with displaced femoral neck fractures (Gardner III/IV) were submitted to Hip arthroplasty by anterior approach. This group had mean age of 72.2years (50-91), 68.8% female, average follow-up of 9.7months (5-26), and 85.5% had comorbidities. Average incision length was 10.1cm (8-13), while average surgical time was around 88.6minutes (60-142), with a mean postoperative hospital stay of 7.9days (2-16). Mean postoperative hemoglobin loss was 1.6g/dl (1.1 to 2.7) and no complications were found. The average HHS and OHS was 91.4 and 42,4points, respectively. Conclusion: Although the learning curve is long and demanding, in our opinion, this approach in elderly people has many benefits. However, studies with longer follow-up and greater population will be needed to draw more definite conclusions and confirm these preliminary results.

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Abstract no.: 37476

EFFECT OF SURGEON PROCEDURE VOLUME ON FAILURE / RE-OPERATION RATE AFTER HIP REVISION SURGERY IN DISTRICT GENERAL HOSPITALS (DGH).

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Introduction: With respect to primary hip arthroplasty, there is evidence of improved outcomes associated with increased Surgeons' procedure volumes. In our hospital, eleven surgeons undertake revision hip surgery. The objective of our study is to investigate the relationship between the volumes of revision hip arthroplasty and failure/re-operation rates. Methods: "Re-operation" was defined as any procedure around the operated hip requiring a general-anaesthetic. "Failures" were defined to include infections and radiographic aseptic loosening irrespective of whether corrective surgery was undertaken. Between 2007-2009, 165 consecutive patients undergoing revision hip arthroplasty were identified retrospectively. Age ranged from 40-93years-old. Follow-up ranged from 4-7years. 30 patients were deceased(18.2%). The operating surgeons, reason for revision, failure and complications were recorded. Results: 11(6.7%)were lost to follow-up. 48(31.2%)patients had complications, of which 23(15%)underwent total of 27 unplanned operations. Of the 154 patients Surgeon-A performed 69(44.8%)revisions and had 10.1%failure rate, Surgeon-B: performed 28(18.2%)with 46.4%failure rate, Surgeon-C: performed 21(13.6%)with 47.6%failures, Surgeon-D: performed 12(7.8%)with 58.3%failures, Surgeon-E: performed 7(4.5%)with 14.3%failures, Surgeon-F: performed 5(3.2%)with 60.0%failures, Surgeon-G: performed 5(3.2%)with 60.0%failures, Surgeon-H: performed 4(2.6%)with 75.0%failures, Surgeon-I: performed 1(0.65%)with 100%failure, Surgeon-J: performed 1(0.65%)with 0%failure, Surgeon-K performed 1(0.65%)with 0%failure rate. Discussion: For individual surgeons the failure rate ranges from 0-100%. Surgeons undertaking lower volumes tend to have the highest failure rate 14.3-100.0%. Numbers on the whole are small and variance have not been calculated. Conclusion: With regard to surgeon volume; 1-69 cases were performed over 3 years. Low-volume surgeons

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Abstract no.: 36773

INDICATION AND RESULT OF DISTAL FEMORAL OSTEOTOMY IN DDH CROWE TYPE 3 OR 4 FOR TOTAL HIP ARTHROPLASTY

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It seems femoral osteotomy is helpful in high riding THA for DDH to bring the femoral head in true acetabulum . normally it is done in subtrochanetric area in crowe type 3 or 4 but can not correct valgus deformity of knee joint in DDH cases. In these study we tried to explain the result of distal femoral osteotomy for bringing the femoral head in DDH in true acetabulum beside correcting the valgus knee deformity by distal femoral osteotomy and fixing by angle plate. During the last 5 year we had 12 cases of DDH crowe type 3 and 4 which had compensatory valgus ipsilateral knee and we did distal femoral close wedge osteotomy. In this study inspite of problems of rehabilitation and ROM of osteotomized knee ,realignment of the knee and lower extremity was significantly has better functional result .

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Abstract no.: 36997

ANATOMIC STUDY ON THE BLOOD SUPPLY TO THE FEMORAL HEAD FOLLOWING HIP RESURFACING USING THE POSTERIOR APPROACH

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University of Calgary, Calgary (CANADA)

Introduction: The aim of this study was to investigate femoral head perfusion following hip resurfacing using the posterior approach .**Methods:** This cadaveric study involved injecting Higgins India ink into both common iliac arteries and evaluating distribution of ink in the resurfaced heads using the Spalteholtz technique. The injection and histological technique was first established and made reproducible by injecting dye in 22 hips. 12 hips were then resurfaced followed by dye injection. Additionally, 4 hips acted as controls with dye injection without resurfacing. The heads were then harvested and sliced to divide each specimen into 15 zones (12 head zones and 3 neck zones).**Results** All 4 controls had good flow of ink in all of head zones and the neck region. In all the resurfaced heads, there was a good flow in all the neck zones. 6 resurfaced specimens had no dye flow to any of the head zones. In the remaining 6, dye stained vessels were seen variably in the anterior and middle zones, but consistently absent in the posterior zones of the head.**Conclusions** Posterior approach for hip resurfacing arthroplasty results in vascular insult to femoral head. However, the extent of insult varies in each case, with posterior zones more affected than the anterior zones. The mechanism by which femoral heads revascularize is unclear. The persistence of the dye in neck points towards the intraosseous blood vessels of the neck as the potential source of revascularisation of the femoral head after hip resurfacing.

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Abstract no.: 37530

NOVEL SURGICAL PROCEDURES IN AVASCULAR NECROSIS OF FEMORAL HEAD WITH COLLAPSE OF FEMORAL HEAD - PROSPECTIVE CONSECUTIVE SERIES WITH A 13-YEAR FOLLOW-UP PERIOD-

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Background: The optimal treatment of femoral head necrosis with collapse in younger patients remains controversial. We have created the novel procedures that involve open reduction and cementation, and reviewed the indication and limits of the procedures. Methods: We prospectively analyzed ten hips in ten patients treated with cementation for collapsed head using a surgical hip dislocation technique. The results were reviewed at a minimum of thirteen years postoperatively. Preoperative and follow-up clinical evaluation was performed with the Japanese Orthopaedic Association (JOA) score. Results: All patients were relieved from pain after operation and showed improvement in walking ability. The mean preoperative JOA clinical score improved from 24.5 to 82.0 immediately after surgery. However, the total JOA score worsened at the last follow-up, which originated from the fact that pain and range of motion score gradually worsened. Four hips (40%) needed prosthesis replacement. Conclusions: Cementation is a simple, safe and relatively effective method for extensive and severe collapse. However, other osteotomies should be considered.

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Room: MARACANÃ

Abstract no.: 37340

A STUDY ON VALIDATION OF A NEW DIGITAL ROENTGEN STEREOPHOTOGRAMMETRIC ANALYSIS TECHNIQUE FOR MEASURING THREE-DIMENSIONAL, IN VIVO JOINT KINEMATICS

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Medicine, SHANGHAI (CHINA)

A preliminary clinical study was carried out to investigate a method's validity, which uses medical imaging CT and DSA testing instruments, combining calibration point by tantalum space technology and advanced Model-based RSA software RFA module technology to reconstruct the space structure and movement of bone-prosthetic joint. The curves of bone and prosthesis models, belonging to those patients who have had hip replacement surgery or shoulder internal fixation, shows spatial fluctuations, which is corresponding to the clinical diagnosis of loosening and the block. The innovation of this method lies in adding the fourth dimension of time variable into the quiescent state of three-dimensional space, whose successful establishment can make up for the clinical examination of prosthesis loosening, providing reliable evidence for patients and doctors.

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Abstract no.: 38108

A RANDOMISED CONTROLLED TRIAL COMPARING THE EFFICACY OF FASCIA ILIACA COMPARTMENT BLOCK WITH LOCAL ANAESTHETIC INFILTRATION FOLLOWING ARTHROSCOPIC SURGERY OF THE HIP

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Introduction: Optimising pain control in the early post-operative period following hip arthroscopy is important in order to allow early mobilisation and safe discharge from hospital. Aims: To compare the efficacy of Fascia Iliaca Compartment Block (FICB) to the standard practice at our unit of infiltrating the arthroscopy portals with local anaesthetic Method: A prospective double blind randomised control trial involving patients undergoing hip arthroscopy for FAI. Participants were randomised to receiving FICB or Local Infiltration of the portal tracts with local anaesthetics. Supplement analgesia in the form of IV opioids and other analgesics were also used in both groups on demand basis. The primary outcome measures was the postoperative level of pain assessed by VAS pain score at 1, 3, 6 and 24 hours after the procedure in both groups. Results: Pains severity in the FICB group was higher in the FIBC group during the first 24 hour period, especially during the 1st hour post operative (mean pain VAS score 5.5 Vs 3.4). This was associated with higher opioids and other analgesic consumptions which has resulted in more side effects such as nausea and vomiting. Conclusions: The LAI (Local anaesthetic infiltration) of the arthroscopic portals provided a better analgesia post hip arthroscopic surgery in comparison to FICB and was also associated with reduced opioids consumption and lower rates of side effects.

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Abstract no.: 37936

ARTHROSCOPIC OSTEOCHONDROPLASTY IN PATIENTS WITH MILD SLIPPED CAPITAL FEMORAL EPIPHYSIS AFTER IN SITU-FIXATION

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Introduction: Not only patients with moderate to severe but also mild slipped capital femoral epiphyses (SCFE) show significant chondral and labral injury due to the postero-medially slippage of the epiphysis and consecutive femoro-acetabular impingement. As early therapy modality, open or arthroscopic osteochondroplasty has been postulated to improve the femoral head offset, however proof lacks in current literature. Methods: 14 patients (6 female and 8 male, 12.6 years; range 10.8-14.8) with mild SCFE (head-shaft-angle: 17.0° +/- 7.5) were included in this study. One to 14 weeks after in-situ fixation with a single 6.5mm cancellous, partially threaded screw, hip arthroscopy with osteochondroplasty was performed by two experienced hip surgeons. Alpha-angle prior and after hip arthroscopy were compared on antero-superior radial MR images. Results: Pre-operative antero-superior alpha-angle was 57.3° (range: 51.0 to 71.4°). After arthroscopic osteochondroplasty mean alpha-angle of 37.2° (range: 30.0 to 49.8°) was measured. No intra- or postoperative complication occurred. Seven patients showed beginning degenerative changes of the antero-superior cartilage or labrum at the time of hip arthroscopy. Conclusion: Antero-superior alpha-angle can successfully be corrected in patients with mild SCFE to normal values by arthroscopic osteochondroplasty. The procedure showed to be safe. Clinical studies with long-term follow-up are required to find evidence of improved functional and radiographic outcome.

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37373

EXTENSIVE SKELETAL LESIONS OF BROWN TUMOR - A SERIES OF CASES

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Introduction: Brown tumor is not a true tumor, caused by chronic excess excretion of parathyroid hormone (PTH). Histopathologically, overexcretion of parathyroid hormone leads to an imbalance of osteoclastic and osteoblastic activity in the fibrous stromal matrix in multiple skeletal lesions **Methods:** We report 3 cases of hyperparathyroidism from 1999 to 2011 with pathological fracture femur in two patients, first case is a 21 year old man, who initially presented with pain and swelling in the right upper limb and inability to lift it. Second case is a 36 year old man with history of trivial trauma and inability to walk with pathological fracture of right femur shaft, third case is a 21 year old female complains of pain in both thigh following a trivial fall and inability to bear weight and pain **Results:** Skeletal survey was done which showed multiple destructive lesions. The radiological features of the multiple bone lesions, which mimicked multiple metastatic tumors or myeloma or vascular anomaly like Durhams. However, pathological examination and abnormal laboratory data showing elevated serum calcium, alkaline phosphatase, and parathyroid hormone and low serum phosphate confirmed the diagnosis of brown tumor. Adenoma in the parathyroid gland was confirmed and surgically resected **Conclusion:** In the first patient fractures united by just bracing with good results. Other two patients with pathological fracture were treated by intramedullary and proximal femoral nail. All the patients were followed up radiologically and clinically and final evaluation done **Keywords:** Brown tumor • Primary hyperparathyroidism • Multiple skeletal lesions **Conflict of interest:** None

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37303

**ONCOLOGICAL AND FUNCTIONAL OUTCOME FOLLOWING
ENDOPROSTHETIC REPLACEMENT FOR PROXIMAL FEMORAL
BONY TUMORS**

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Introduction: The objective was to evaluate the oncological and functional outcome following management of proximal femoral tumors using proximal femoral endoprosthesis. Methods: This study included thirty-one patients ; fifteen males and sixteen females .The mean age of 39.9 years. The tumor resection was carried out following oncological principles, endeavoring to achieve a wide margin followed by replacement by bipolar femoral endoprosthesis. The mean follow up was 2.8 (range 1- 9) years. The overall patient survival was 83.87% at one year with death of 5 patients after one year due to distant metastasis. The functional outcome was evaluated using musculoskeletal tumor society score (MSTS) .The evaluation of oncological outcome included local recurrence and distant metastasis. Results: The functional score for our series was 24.2 out of 30 according to MSTS score. Pain relief score was 4.87 / 5. Function score was 3.26 /5 Emotional acceptance score was 4.52 / 5. Use of support score was 4.2 / 5. Walking distance score was 72.3%. Gait score was 3.5 /5. • The one year survival rate of the prosthesis was 90.3%. The 2.8 years survival rate of prosthesis was 70%. Limb salvage ratio after one year was 96.8%. 2.8 years limb salvage ratio is 78.3%. There were 2 early dislocations, 2 cases of loosening & 4 cases of infection. Discussion & Conclusion: At short term follow up, the modular endoprosthesis for proximal femoral tumors provides acceptable function for patients with metastatic tumors , pathological fractures with a low incidence of implant related complications.

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37232

THE DIAGNOSIS USING MDM2 AND CDK4 FOR LOW-GRADE OSTEOSARCOMA AND TREATMENT WITH BIOLOGIC RECONSTRUCTION

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Background: Low-grade osteosarcoma is extremely rare and the diagnosis is difficult. We have experienced 9 cases of low-grade osteosarcomas. Patients and methods: Nine cases of histologically-diagnosed low-grade osteosarcomas (4 males and 5 females) between 1999 and 2010 were retrospectively reviewed. The pathologic diagnoses included parosteal osteosarcomas, low-grade central osteosarcomas, and low-grade chondroblastic osteosarcoma. The diagnosis, duration from initial surgical intervention including biopsy to final diagnosis, number of histologic examinations, treatment procedures, ISOLS functional score are reviewed. CDK4 and MDM2 expressions were examined. Results: Duration from initial surgical intervention including biopsy to final diagnosis was a mean of 9.4 months. The initial benign diagnoses on biopsy specimens included fibrous dysplasia and giant cell tumor. The average number of histologic examinations was 1.8 (range, 1-4). Seven cases were reconstructed by frozen autografts, distraction osteogenesis, or vascularized bone grafts as biological reconstruction. The most ambiguous condition within the differential diagnosis was fibrous dysplasia. Six out of nine (more than one-half) cases were initially diagnosed as benign; however, there were malignant findings in the first material based on a retrospective review. The average functional score of biologic reconstruction and megaprosthesis was 92.3 and 87. CDK4 and MDM2 were negative except for one case. Conclusion: Low-grade osteosarcomas can be misdiagnosed as benign lesions, especially fibrous dysplasia. If the diagnosis of a low-grade osteosarcoma is not established based on radiologic findings, care should be exercised, even when a biopsy suggests a benign lesion. Biological reconstruction might be a better option for low-grade osteosarcomas.

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Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37008

COMPLICATIONS AND OUTCOMES OF THE PELVIC GIRDLE MALIGNANT TUMORS AFTER HEMIPELVECTOMY

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Aim: To evaluate complications and outcomes in patients with malignant tumors of pelvis treated with limb sparing resection or amputation. **Methods:** Between June2001 and September2013, 33 cases were treated with internal(IH) or external hemipelvectomy(EH). The diagnosis included chondrosarcoma(16), Ewing's sarcoma(6), osteosarcoma(2), synovial sarcoma(1), malignant periferic nerve sheath tumor(1), high grade soft tissue sarcoma(5) and Kaposi sarcoma(1). One patient underwent IH; afterwards EH was applied due to complications. Totally, 23 limb sparing surgery and 11 amputations were applied. We evaluated post-operative early(<2months) and late-period(>2months) infections, peri-operative blood loss, intensive care necessity and flap necrosis. **Results:** 23 internal and 11 external hemipelvectomy procedures were performed totally. Follow-up of survivors ranged from 8 to 130 months(mean 65 months). In early period (<2 months), six IH(28%) and four EH(36%) patients had local infections. Escherichia coli(4) and others were isolated in the internal-group. Four patients had local flap necrosis and one of them was undergone EH. All flab necrosis were seen in internal-group and treated with debridement, wound care and rectus abdominis flab. Six patients(17%) needed intensive care unit admission. Average blood replasman was 2.1L; the procedures took average 7 hours. The hip dislocation was encountered in four IH(19%), they treated with open reduction. At late-period, Acinetobacter baumannii(83%) and Proteus mirabilis(16%) caused infections in five internal and one external group. **Conclusions:** After resection of large pelvic malignant tumors, the complication rate is high. The lowest complication rate is one of the most important point to the success of limb salvage surgery with pelvic malignant tumors.

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 36983

SURGICAL TREATMENT FOR POSTOPERATIVE RECURRENT PRIMARY MALIGNANCIES OF THORACIC SPINE

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Objectives:To investigate the surgical results of postoperative recurrent primary malignancies of thoracic spine and to analyze the treatment algorithm of this kind of diseases.**Methods:**Ten cases of postoperative recurrent primary malignancies of thoracic spine were subject to surgical treatment between November 2007 and November 2012. All the cases were treated with one-stage operations, including 5 cases of spondylectomy (2 cases of en bloc resection and 3 case of piecemeal excision), 2 cases of curettage, 3 cases of palliative decompression, all of which were instrumented with pedicle screws and reconstructed with mesh or bone cement. The postoperative treatments included 2 cases of simple chemotherapy, 1 case of simple radiotherapy, 3 cases of combined chemotherapy and radiotherapy.**Results:** Local pain relieved in all cases in various degrees. Among the 10 cases with preoperative dysfunction of spinal cord, 8 cases improved, 1 case remained no change and 1 case deteriorated after operation. The average follow-up time was 20.40 ± 7.62 months. Survival analysis showed mean survival time was 23.93 ± 2.82 months. **Conclusion:** For the cases with feasibility of radical resection, en bloc resection could still be chosen. While for the cases without feasibility of radical resection or with metastasis, palliative operations should be chosen to avoid over-treatment. In order to achieve optimal surgical margin, the secondary surgeries with en bloc resection are supposed to be subject to combined anterior-posterior approach. For the cases highly difficult and risky in radical resection, best outcomes should not be expected from simple surgery, while adjuvant radiotherapy should be administered readily.

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 36963

BISPHOSPHONATES AS AN ADJUVANT THERAPY IN THE MANAGEMENT OF GIANT CELL TUMORS

Sudhir Kumar GARG, Purnima AGGARWAL, Rohit JINDAL, Sandeep GUPTA, Ravi GUPTA

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Objectives: Large GCT requires extensive bone grafting to restore bone stock. They also have higher risk of local recurrence. We present our experience of treating large stage 3 GCT with adjuvant bisphosphonates to restore bone stock & reduce incidence of recurrence. Materials & Methods: 34 patients. Proximal humerus was involved in 6 patients, proximal femur in 2, distal femur in 14, proximal tibia in 11 and distal tibia in 1. All patients were treated with extended curettage. Tricortical iliac graft in 29, fibular graft in 1 and morselized allograft in 1 was used to support subchondral bone. In two patients with pathological fractures, internal fixation was used. All these patients were given minimum of three zoledronic acid injections, starting on third postoperative day and then every two months. 11 patients were also given oral risedronate for 6 months. All patients were followed at monthly interval. At each visit bone formation was evaluated using x-rays and function was assessed using MSTS score. Results: In 33 patients (97%), progressive bone formation was observed to allow unsupported weight bearing or activities. All these patients achieved good to excellent function with MSTS score ranging from 24 to 28. In one patient there was a large recurrence which was treated with en-bloc resection and endoprosthetic reconstruction. Conclusions: Bisphosphonates when used as an adjuvant to extended curettage in Stage 3 GCT resulted in extensive bone formation in majority of patients (97%). It reduced the need for extensive bone grafting and also reduced the recurrence rate.

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 36932

RESECTION RECONSTRUCTION OF THE UPPER PROXIMAL FEMUR INDICATIONS AND RESULTS

Mourad HAMIDANI, Reda HARRAR, Amine TOUHAMI, Anissa BENAIDA, Myriam AIT SAADI
SAAD DAHLAB UNIVERSITY, BLIDA (ALGERIA)

INTRODUCTION Progress of the chemotherapy,allow resection reconstructive surgery by prosthesis ,METHODS from 2007 to 2012 We treated 12 patients,There were 05 men and 07 women, means age of 45 years 06chondrosarcomes 01ostéo chondrome 01ostéo sarcoma 01ostéo blastome,agressif 03 Metastasis ; 01breast cancer 01lung cancer ;and 01cancer of biliary ways eleven patients benefited an IRM,to guide the resection Intervention usually led by an external access. And sometimes internal approach is used to control vessels The reconstruction is made by massive prosthesis of the hip without allograft, five cases on one time four cases on two times The wide resection is done according the IRM requiring resection of 170 mms on average, reconstruction has been made by massive prosthesis of the hip without allograft.RESULTS: follow up for primitive tumors middle : 9 months and half and for the metastasis 6 months and half functional outcome; according ENNEKING score The disappearance of the pain was constant all patients took the walk one crutch.The ROM permit an active mobility Radiological resultsBony resumption of the foundation of the diaphysis close to the slice of section Oncological results;01 patient presented a local recurrence after one year and one presented a metastasis pulmonary,and died after 18 months Discussions The operative had a curative goal in 9 cases and a palliative goal in 3 cases of metastasis functional results were satisfactory with suppressed suffering and we succeeded to allow walking in a short delay Conclusion It is a heavy surgery requiring specialized services

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 36774

**A RETROSPECTIVE STUDY FOR OSTEOGENIC SARCOMA
AROUND THE KNEE JOINT, AMPUTATION VERSUS LIMB
SALVAGE (ARTHROPLASTY OR ARTHRODESIS)**

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Reconstruction after resections for osteosarcoma around the knee joint is a challenging problem because of advance in radiotherapy and neoadjuvant therapy limb salvage is the best procedure in comparing with amputation. We evaluated the long-term survival , morbidity and functional outcome in 52 cases of osteosarcoma around the knee in 10 years (2000-2010) 32 limbsalvage and 20 amputation. The results show that survival is equivalent between amputation and limb salvage. Complications occur more frequently in limb salvage. The long-term outcomes of limb salvage have been found to be substantially better regard to quality of life.

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 36761

**FUNCTIONAL OUTCOME AND FAILURE PATTERN OF
ENDOPROSTHETIC RECONSTRUCTION FOR OSTEOSARCOMAS
OF THE DISTAL FEMUR**

Shah Alam KHAN, Rishi Ram POUDEL, Venkateshan Sampath
KUMAR, Sameer BAKHSHI, Shishir RASTOGI
All India Institute of Medical Sciences, New Delhi (INDIA)

Introduction: There are varied results of endoprosthetic reconstruction in literature with very few articles from the developing world. We objectively analyzed various factors, which affected functional outcome for endoprostheses . Methods: Retrospective analysis of 54 cases of distal femoral Osteosarcomas, with endoprosthetic reconstruction between January 2004 and January 2007. Those with a minimum follow-up of 5 years were included. Total of 41 endoprosthesis were available for evaluation. Records were analyzed for MSTS Score, type of Prosthesis used, follow-up period, age, gender, time between primary surgery and failure and activity status of the patient following surgery. The failure of the endoprosthesis (which was seen in 14 cases) was evaluated and classified as failure due to sepsis, aseptic failure, structural failure of the implant or failure following local recurrence. Results: Average follow-up was 62 months. 30 males and 11 females in the study. Average age was 17.6 years. The mean MSTS score at the end of five years was 23. There were 14 patients who were classified as failures (5 females and 9 males) and required a second surgery. There were 7 infective failures, 3 aseptic loosening, 3 cases with structural failure of the implant and one patient had prosthesis failure following late local recurrence. The average time between primary surgery and failure was 21.6 months. Statistical analysis showed relative risk of patient death was 2 times higher than prosthesis failure in our series. Rate of infection and aseptic loosening did not show statistically significant difference between gender, activity status or age sub-groups.

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 36760

REDEFINING PELVIC RESECTION TYPES: A NEW CONCEPT

Shah Alam KHAN, Rishi Ram POUDEL, Venkateshan Sampath

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Introduction: pelvis resections are of 3 types depending on geographical area involved. Both types II and III and a combination of I plus II & II plus III bring severe morbidity for the patient. Methods: We re-classified the pelvic resection margins to Type One and a Half (instead of I plus II) and Type Three and a Half (instead of II plus III). Our main approach was to have safe oncological margins. Results: There were a total of 12 patients (7 chondrosarcoma, 3 osteosarcoma, 2 Ewings). 3 females and 9 males. 8 had Type I and a half and 4 had Type III and a half resections. MSTS Score in age matched cohort for Type I pelvic resections and Type II resections from a historic cohort were 75 and 65 respectively. Statistical correlation of the functional outcome was done using the SPSS (version 20) software. The results in Types I and-a-half cases were not significantly different from those seen in conventional type I pelvic resections with transposition of the hip. But there was statistically significant difference between the functional outcome for patients with Type II pelvic resection and Type III and a half resections with the latter fairing better in the short-term follow-up. Conclusions: Salvaging the acetabulum helps in supporting the femoral head in situations where pelvic prostheses are not used. This is important as pelvic prostheses are known to have a high complication rate. Salvage of the acetabulum should although not interfere with oncological margins.

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 36666

USE OF AUTOLOGOUS NON VASCULARIZED FIBULAR STRUT GRAFT IN TREATMENT OF BENIGN CYSTIC LESIONS OF THE PROXIMAL FEMUR

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Proximal end of the femur is a common site of benign aggressive lesions that might cause destruction and lead to pathological fracture. Treatment of these lesions usually entails curettage , bone grafting with or without plate osteosynthesis. Patients and methods; this study included 18 patients , 11 were males with mean age of 12 years (range 4-34 years). Diagnosis , aneurismal bone cyst (10), simple bone cyst (4) and one case of giant cell tumor, eosinophylic granuloma, fibrous dysplasia, and enchondroma. Treatment was curettage, hydrogen peroxide lavage and autologous non vascularized fibular graft without internal fixation except in one case presented by pathological fracture. Fibula was impacted as a strut , and kirshener wire was used to fix it in 4 cases. Patients were put in hip spica for 6-8 weeks. Follow up ranged from 20 -40 months with mean time of 26 weeks. All patients had excellent functional outcome at the last visit except one case that had good function according to musculoskeletal tumor society score. Fibular incorporation took 8-12 months. Time to weight bearing ranged from 3-6 months. Fibula was reformed at donor site at most of cases with minimal complications. We believe that thorough curettage without refilling of the cavity is a satisfactory method of treatment of benign aggressive lesions of proximal femur ,use of non vascularized autologous fibular graft is helpful as an early biological support and helps in cyst healing . Internal fixation is not necessary especially in younger patients.

Date: 2014-11-21

Session: Tumours: Short Oral Presentations - Oncology II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 36633

PROGNOSTIC FACTORS OF AGED PATIENTS WITH PRIMARY MALIGNANT BONE AND SOFT TISSUE TUMORS

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Objects:According to the increase in overall aged population in Japan, the number of patients with primary malignant bone and soft tissue tumors in advanced ages is also increasing. In order to determine the prognostic factors, we retrospectively reviewed the clinical data of 90 aged patients over 65 years old.
Methods:The clinical data of 90 patients (men 46 women 44) over 65 years old (65-94, average 75.2±6.8) with the diagnosis of primary malignant bone or soft tissue tumor (bone 19 soft tissue 71), treated from March 1993 to May 2013 at our institution was collected. The average follow-up period was 44.8 months. Variable clinical information of bone, soft tissue, location, size, depth, grade, dementia, and American Society of Anesthesiologists-physical status (ASA-PS) were investigated in order to detect prognostic factors of elderly patients with primary bone and soft tissue tumor using Cox hazard analysis.
Results:Regarding oncological outcome at last follow-up, 52 patients were in CDF, 8 in NED, 13 in AWD, 15 in DOD, and 2 in DOAD. The 5-year overall survival rate was calculated to be 77.5%. Multivariate analysis proved that poor prognostic factors were high grade of tumor and ASA-PS of 3 and over.
Discussion:The 5-year survival rate of current study was consistent with the results of previous reports. Tumor grade has been frequently reported as a significant prognostic factor. We proposed that ASA-PS of 3 and over was a new poor prognostic factor. Assessment of preoperative general condition is considerable as an extremely important factor before removal of malignant bone and soft tissue tumor in elderly patients.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37889

DOES THE ENHANCED RECOVERY PROGRAMME WORK IN FRACTURE NECK OF FEMUR PATIENTS?

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“A new evidenced-based model of care that creates fitter patients who recover faster from major surgery.” 1 History – Early 2000: Prof Henrik Kehlet, Copenhagen – Orthopaedic models such as Accelerated or Rapid Recovery have been in existence in England also since early 2000 – Clinician-driven programme – UK has piecemeal approach not maximising benefit for patients – Why has it not spread across the NHS when benefits are clearly reported Elements of ERP 1. Improve pre-operative care 2. Reduce the physical stress of the operation 3. Increase patient comfort post-operatively 4. Improve post-operative care 2 • Aim – To determine if the enhanced recovery programme is having a beneficial effect on patients. • Outcome measures – Length of stay – Mortality • Enhanced recovery programme came into action 01/01/2013 • 3 months pre and post implementation data analysed Pre initiation (01/10/12-31/12/12) Post initiation (01/01/13-31/03/13) No. of patients 97 104 No. of deaths 6 9 Average length of stay 14 days 21 days Standard deviation 12.84 20.57 Two tailed P value is 0.0094. This is statistically significant Pre initiation (01/10/12-31/12/12) Post initiation (01/01/13-31/03/13) No. of patients 97 104 No. of deaths 6 9 Average length of stay 14 days 21 days Standard deviation 12.84 20.57 Median 11 days 13 days Conclusion: • Although it doesn't make much difference in mortality or LOS, we need to repeat this audit in 6 months to see if ERP makes a difference or not. Reference: 1. <http://www.improvement.nhs.uk/enhancedrecovery/> 2. http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/enhanced_recovery_programme.html

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37929

INCIDENCE AND MORTALITY FOLLOWING IN-HOSPITAL NECK OF FEMUR FRACTURES.

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Introduction: The incidence of neck of femur fractures is on the rise putting more pressure on hospitals to achieve targets. To our knowledge, there is very little published on in-hospital neck of femur fractures with respect to incidence and mortality post surgery. Objectives: To review the incidence of patients sustaining in-hospital neck of femur fractures whilst being admitted with other concurrent illness. Also to look at the patient's demographics and their mortality rates at 30, 90 and 1 year post surgery. Methods: This is a retrospective review of our hospital's neck of femur fracture database of admissions between January 2010 to December 2012. Electronic records were also reviewed. Patients were divided into two groups: acute neck of femur fracture admissions group and in-hospital neck of femur fracture group. Results: Total of 1156 patients identified with neck of femur fractures between Jan 2010 and Dec 2012 with 1086 out of hospital acute admissions (93.9%) and 70 in-hospital neck of femur fractures (6.1%). Most injuries occurred in non-surgical wards. In-hospital cases had a higher ASA grade and were less mobile pre-injury compared to acute admissions. In-hospital mortality, 90 days and 1 year mortality rates were significantly higher in the in-hospital fracture group compared to the acute admissions group. Conclusions: Patients sustaining in-hospital neck of femur fractures are high risk patients with higher mortality rate post surgery.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37414

**HYPONATRAEMIA IN FRACTURE NECK OF FEMUR PATIENTS:
TRULY A CLINICAL CONCERN?**

Hassaan Qaiser SHEIKH, Fahad Siddique HOSSAIN, Adeel AQIL,
Faian JARRAL, Yazan S KHALED, Harish KAPOOR
Leeds General Infirmary, Leeds (UNITED KINGDOM)

Introduction: Hyponatraemia is a common finding in the elderly fragility hip fracture population. It is unclear what the impact of this co-morbidity is with regard to outcomes in the peri-operative period. This can lead to delays to definitive surgical management owing to anaesthetic concerns about hyponatraemia. The aim of this study was to evaluate the incidence and outcomes of peri-operative hyponatraemia and to assess the impact of a pre-operative management protocol in improving these outcomes. Methods: We conducted an observational study in a Level-I Trauma Centre in conjunction with the National Hip Fracture Database. Data was prospectively reviewed from the medical notes, drug/fluid charts and online database. Our outcomes measured inpatient stay and incidence of pre-operative and post-operative hyponatraemia. Results: A total of 120 patients were included (mean age 77 years, 60-97). The overall incidence of hyponatraemia was 11.9% pre-operatively and 17.4% post-operatively. The incidence of hyponatraemia at any point during inpatient stay was 23.8%. Routine use of normal saline for initial intravenous fluid resuscitation reduced the incidence of post-operative hyponatraemia from 28.5% to 8.3% ($p < 0.05$). There was, however, no difference in the mean inpatient stay between the hyponatraemia and normonatraemia groups (25 v 26 days). Conclusion: Hyponatraemia is common amongst fragility hip fracture patients. Incidence can rise post-operatively owing to intra-operative fluid loss but the impact of this increase can be reduced by optimising pre-operative medical care. Choice of fluid resuscitation is paramount in achieving this. However, there is no difference in hospital inpatient stay in this patient cohort.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37752

**TARGON FEMORAL NECK FOR FEMORAL-NECK FRACTURE
FIXATION: LESSONS LEARNT FROM A SERIES OF ONE HUNDRED
AND THIRTY FIVE CONSECUTIVE CASES**

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Purpose: Internal fixation versus joint replacement for treating intracapsular hip fractures is still a major debate. The Targon™ FN fixation concept is innovative; two small case series are promising. We present the first larger series. Methods: We conducted prospective documentation of all Targon™ FN cases since 2006. The implant was used for all undisplaced fractures, and for displaced fractures in patients of a biological age ≤ 60 years. Besides demographic data and fracture classification, we analysed infection, haematoma, implant perforation, nonunion and operative revision procedures. Results: In 135 cases (mean age 71 years; average operation time 60 minutes; average hospital stay ten days), we found a surgical complication rate of 16.4 %. Conversion to joint replacement was necessary in 9.6 %. Complication rate was significantly higher in displaced fractures. Conclusions: Our study confirms low general complication rates. However, implant perforation seems to be underestimated. Optimised reduction technique may help to reduce this complication.

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Session: Trauma: Short Oral Presentations Trauma

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38474

DYNAMIC HIP SCREW IMPLANT FAILURE AND BIOLOGICAL RISK FACTORS WITH ASSESSMENT OF FUNCTIONAL OUTCOME IN FAILED IMPLANTS.

Loku Kanakanamge Don Chandana Rathna KARUNATHILAKA,
Narendra PINTO, Delepa BANAGALA, Siinnarasa KUGATHASAN
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The extra-capsular fracture neck of femur is the common presentation of hip fractures. DHS may complicate with screw cut-out and implant failure. Study has been designed in a cohort of Sri Lankan patients to identify the biological risk factors related to DHS implant failure. Objective: Identify the biological risk factors associated with dynamic hip screw implants failure and identify the functional outcome irrespective of implant failure. Methodology: Descriptive case control cohort study. Study included with previously mobile patients with fractures comes under AO classification (31 A- 31A 3) and follow up patients. Results: Patients survival on operated patient was 91.61% at the end of 1st yr .The average follow-up time was 13.7 months. There were no cases of implant breakage or bending of implants. Collapse of the intertrochanteric ridge is 37.50%, collapse of the trochanteric region is 18.05%, collapse of sub trochanteric region is 33.33% and collapse of femur neck is 15.27%. Varus malunion noted in 5.55%. Proximal DHS screw migration seen in 6.94%. The Harris hip score was used for functional outcome. Conclusion: Tip apex distance is highly predictive for the screw cut-out. However, it is not the only factor that determines the stability of the screw. Quality of bone, degree of osteosynthesis, screw placement in femur neck and associated comorbid factors are important. Posterior and inferior locations of the screw may help to support the posteromedial cortex and calcar femoral in unstable intertrochanteric fractures and reduce the risk of cut-out failure.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma

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Abstract no.: 37308

EFFECT OF TIP APEX DISTANCE (TAD) ON FIXATION FAILURE IN PATIENTS WITH INTERTROCHANTERIC FRACTURES OF THE FEMUR.

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Introduction: The aim was to evaluate the proper position of the lag screw in the femoral head and to assess the effect of introduction of Tip Apex Distance (TAD) concept on failure prediction of DHS. Patients and Method: This study included 51 patients. There were 27 males and 24 females with a mean age of 67years. Nine patients with stable and 42 patients with unstable fractures. The TAD was measured on the immediate post-operative X-Rays. Follow up X rays were done at 6,12,24 weeks . Results: There were 12 cases (23.5%) of fixation failure among the collected cases. In the 12 cases in which fixation failure occurred; the mean TAD was 31.3 millimeters (range, 18 to 49mm). In the 39 cases of fracture union, the mean TAD was 22.12 (12 – 37) mm with a p value < 0.003. There was a direct relationship between an increased TAD and an increased risk of fixation failure. Out of the 36 cases with (TAD) <25 millimeters; 2 cases (5.56%) of them had fixation failure and out of the 15 cases with tip-apex distance (TAD) ≥25millimeters; 10 cases (66.67%) of them had fixation failure (p value <0.001). In the failure group there were 9 females (75%) and there were 3 males (25%), and in the union group there were 15 females (38.5%) and there were 24 males (61.5%). (p value <0.027). Discussion and Conclusion: The TAD is a simple reproducible method that is very helpful to describe the location of the screw.

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Session: Trauma: Short Oral Presentations Trauma

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38435

**REVERSE OBLIQUE INTERTROCHANTERIC FEMORAL
FRACTURES (AO/OTA 31-A3) TREATED WITH THE
CEPHALOMEDULLARY NAIL**

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Introduction: The purpose of this study was to review the clinical and radiographic outcomes of using a single cephalomedullary nail design in 148 reverse obliquity intertrochanteric fractures at two different Level-1 trauma centers, comprising the largest retrospective study to date. Methods: Patients with AO/OTA 31-A3 fractures that were identified from the comprehensive database at two Level-1 trauma institutions were included. Outcomes for each patient were reviewed using the electronic medical record. The tip apex distance (TAD) and quality of alignment were assessed from the final follow up radiographs. Results: Average follow-up was 53 months. The average age was 69.9 years. The injury mechanism was simple fall in 118 patients and non-fatal high energy in 31 patients. There was one intraoperative fracture. The postoperative complication rate was 12% (n=18) and twelve patients (8%) required reoperations. The quality of reduction was anatomic in 57, good in 64, and poor in 28 patients. The average tip apex distance (TAD) for all patients measured 21 mm (range, 8-36). Two of the 24 patients (8%) with a TAD \geq 25mm had postoperative complications. One year mortality rates was 10.1%. None of the 30 patients less than 60 years died within the first year. Discussion and Conclusion: Long cephalomedullary nails demonstrate acceptable complication rates, low reoperation rates and high rates of healing in the treatment of reverse oblique fractures. The TAD did not play a significant role in postoperative healing. The one-year mortality of 10% in this group remained low compared to other types of hip fractures.

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Session: Trauma: Short Oral Presentations Trauma

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Room: MARACANÃ

Abstract no.: 38054

MANAGEMENT OF UNSTABLE INTERTROCHANTERIC FEMORAL FRACTURES IN THE CO-MORBID ELDERLY: PFN, DHS OR HEMIARTHROPLASTY?

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Introduction: Surgery for unstable intertrochanteric femoral fractures in the elderly with multiple co-morbidity is critical. The dynamic hip screw (DHS) has known high implant-related complication rates. Proximal femoral nailing (PFN) may not be possible always due to technical complexity. Bipolar hemiarthroplasty (BHA) has been suggested as a coxofemoral bypass. We retrospectively compared mortality, morbidity and results following treatment of unstable intertrochanteric femoral fractures by these three different methods. Materials: Hospital records from Dec 2006 to Nov 2010 were reviewed. 110 patients with unstable intertrochanteric fractures matched for demographics and co-morbidity (ASA grade III or IV) were selected amongst the population base for the study, and divided into three treatment groups (DHS, PFN and BA). These groups were then compared for intra-, peri- and post-operative results. Subgroup and regression analysis was used to define significant findings. Results: The results of analysis were not startling. DHS group had slowest 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 should probably be avoided in this fracture type. PFN is effective, but needs attention to surgical technique to avoid complications. Bipolar hemiarthroplasty may be best for some patients in the hands of a well trained surgeon.

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Abstract no.: 36705

ROLE OF ARTHROPLASTY IN INTERTROCHANTERIC FRACTURES

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Background: Osteosynthesis is possible in majority of patients of intertrochanteric fractures but it has higher complication rate in patients with unstable and comminuted fractures, patients with associated comorbidity and severe osteoporosis. Primary prosthetic Arthroplasty offers great opportunity to mobilise these patients rapidly thus preventing complications such as pneumonia, thromboembolism (DVT), pressure sores etc. MATERIAL AND METHODS: Fifty patients were treated at our institution with hip arthroplasty in intertrochanteric fractures. Depending on the nature of fracture various options are: - If calcar intact prosthesis can be inserted directly after femoral canal preparation -If calcar deficient, calcar is reconstructed with a cut autograft from the femoral neck. The calcar autograft is compressed between collar of the femoral stem and medial proximal femur as the stem is fully inserted. If lesser trochanter is fractured, it is reattached in its anatomical position with encirclage wire, if greater trochanter is fractured, another encirclage wire is placed around proximal femur RESULTS: Evaluation of clinical results was done using Harris Hip Score Excellent/Good : 20 patients (80%), Fair : 2 patients (8%), Poor : 2 patients (8%). One patient expired in postoperative period probably due to embolism who had poor cardiopulmonary reserve and cement was used. CONCLUSION: Arthroplasty in elderly and comminuted trochanteric fractures with osteoporosis is a good option as this allows early mobilization and have less complications as compared to osteosynthesis. Authors are in opinion that arthroplasty is a real advantage in difficult situation in properly selected patients of trochanteric fractures. Keywords: intertrochanteric fractures, Arthroplasty, Osteosynthesis

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Session: Trauma: Short Oral Presentations Trauma

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Room: MARACANÃ

Abstract no.: 36826

**MIPO IN COMMINUTED SUBTROCHANTERIC FRACTURES-
TECHNICAL TIPS**

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Osteosynthesis with open reduction techniques in comminuted subtrochanteric femoral fractures can further devitalize fragments and lead to increased rate of non-union, infection, and implant failure. Dynamic condylar screw using indirect reduction and minimally invasive technique (biological fixation) may be a good alternative to avoid these complications. An analysis of the technical difficulties of the procedure with the tricks to prevent these is presented. Mean age in 46 patients with comminuted subtrochanteric fractures was 43.7 (range, 24-66) years. There were 7 Seinsheimer type III, 16 type IV and 23 type V fractures. Mean union time was 16.13 (range, 13-23) weeks. No patient had non-union or implant failure. Mean follow-up was 25.09 months. Technical difficulties were inaccurate placement of guide pin in 2; difficulty in sliding the plate due to obesity in 1; difficulty in gliding barrel plate over condylar screw in 1; and technical failure in 2 patients. Seven patients had mean limb length discrepancy of 1.48 cm. Mean Harris hip score was 88.2 (range, 80-90). Two patients had coxa vara and persistent limp. Osteosynthesis of comminuted subtrochanteric fractures is desirable using indirect reduction and minimally invasive technique. Dynamic condylar screw can be used based on these principles, however the proper planning and execution of the technique is required to achieve good functional outcome and to avoid complications. Accurate placement of the guide pin is the key to avoid technical difficulties during the procedure. Few tricks in the technique make use of DCS in biological fixation of comminuted subtrochanteric fractures easier.

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Session: Trauma: Short Oral Presentations Trauma

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37785

SUBTROCHANTERIC FEMORAL FRACTURES TREATED WITH INTRAMEDULLARY FIXATION: OUR INSTITUTIONAL EXPERIENCE

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Introduction: The aim of our study was to evaluate the characteristics and the outcome of subtrochanteric fractures admitted to our institution, with a special report to the development of complications. Methods: This is a case series of patients treated in our institution for subtrochanteric femoral fractures, between January 2007 and July 2012. The fractures were classified according to AO/OTA and Seinsheimer classification. Results: Over this 5-year period, 211 (71 males (33.6%)) consecutive patients met the inclusion criteria and formed the study group with a mean age of 71.3 years (stand. deviation 18.7 years). 176 patients progressed to uneventful healing within a mean of 6 months (range, 4 to 8 months). 35 patients (16.6%) developed non-union (septic non-union in one patient), with 23 patients having associated implant failures. All of the patients with non-unions underwent further operations until fracture union was achieved. Another eight patients had breakage of the distal locking screws (dynamisation) although union was otherwise uncomplicated. Two patients sustained periprosthetic fractures, one of which was iatrogenic (nail penetrated anterior cortex of distal femur), while the other resulted following a mechanical fall. Recognised predisposing factors to non-union included mal-alignment, poor bone stock and infection. Conclusions: Subtrochanteric fractures treatment can be very challenging for the treating physician and is associated with a high incidence of complications. Initial management should aim for satisfactory reduction, especially avoiding varus mal-alignment and distraction. In case of aseptic non-union, a single stage procedure should be carried out, ensuring that the biological and mechanical environments are optimised.

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Session: Trauma: Short Oral Presentations Trauma

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Room: MARACANÃ

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FRACTURES OF MANUBRIUM STERNI - DIFFERENT TYPES, TREATMENT OPTIONS AND A POSSIBLE CLASSIFICATION BASED ON A LEVEL I TRAUMA CENTER EXPERIENCE.

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Introduction Sternal fractures are rare with 3–8 % out of the total number of trauma cases mostly caused by direct impact to the anterior chest wall or due to a flexion-compression mechanism of the trunk. Fractures mainly occur at the sternal body. Only rare cases of manubrium fractures are described in literature, there are transverse and oblique ones as well as complex fractures with multiple fragments . Material and Methods Between January 2012 and March 2014 665 trauma patients were admitted to the emergency room and received whole body CT-scan. They were analysed retrospectively for sternal fractures. In case of unstable and dislocated fracture stabilizing was performed by anterior plating through a median approach using low profile titanium plates (MatrixRibTM). Results 96 (14,5%) out of the patients showed a sternal fracture, thereunder 17 (2,5%) at the manubrium, thereunder 6 oblique, 10 transverse and 1 multiple fracture. In 6 cases stabilization without complications was performed, stable and undislocated fractures were treated conservatively. Discussion 17,7% of sternal fractures were localized at the Manubrium, Dislocation in this region leads to a sagittal instability and unstable trunk in transverse fractures (A-Type), rotatory instability with involvement of the shoulder girdle in oblique fractures (B-Type) and a combined instability in multiple fractures (C-Type) . Anterior plating provides sufficient stabilization. Plating was performed longitudinally in A-Type-fractures, transversally in B-Types whereas C-Typ-fractures are stabilized either by special plates or a combination of plates in different directions.

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RADIOLOGICAL OUTCOME OF SURGICAL TREATMENT OF BIPHOSPHONATE ASSOCIATED ATYPICAL FEMUR FRACTURES

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To assess the efficacy of nail fixation in bisphosphonate associated femur fracture, patients with the atypical femoral fracture treated at Elmhurst Hospital Center from 2006 to 2011 were identified by CPT code, confirmed by x-ray and medical record review with inclusion criteria of ASBMR major feature of atypical femoral fracture. The controlled group of patients was identified in the same period time matched for age, location of the fracture, major co-morbidities. 51 bisphosphonate associated femur fractures were identified. 28 patients fell into the inclusion criteria with 2 bilateral fractures and were used to compare to 29 cases of typical femur fractures treated with IMN in the same period matched for age, location of fracture and co-morbidities. Average time to the union is 8.4 months in the bisphosphonate group and 7.3 months in the control group (P=0.364). Union rate at six months is 58.6% in the bisphosphonate group and 65% in the control group (P=0.424). 94% of bisphosphonate fractures healed by 1 year follow up. Our results supported the previous report of delayed healing for nail fixation of bisphosphonate fractures. However, near similar delayed healing in control group and high frequency of fracture in subtrochanteric area or proximal third of femur indicated that increasing stress on fracture site may contribute to the delayed union. We did not find any association between the varus reduction and delayed healing. Interestingly, lateral cortex thickening was correlated with delayed union and varus reduction suggesting that severe suppression by bisphosphonate drugs do effect bone healing.

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Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37571

THE AGE OF THE PATIENT AFFECTS THE SEVERITY OF HALLUX VALGUS AT PRESENTATION FOR SURGICAL INTERVENTION.

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Introduction: Surgical correction of hallux valgus is one of the commonest forefoot procedures. There is a large spectrum of disease presenting for surgery and we hypothesised that younger patients present for surgery with less severe deformity. Method: The weight bearing dorso-plantar x-rays of 394 consecutive feet undergoing any form of surgical hallux valgus correction at the Sussex Orthopaedic Treatment Center (SOTC) between June 2012 and February 2014 were analysed by a single observer blinded to the purpose of the study. The inter-metatarsal angle (IMA) and hallux valgus angles (HVA) were recorded. A sample of 50 x-rays were randomly selected and re-analysed by the same observer. The intra-observer reliability was calculated. A Pearson product-moment correlation coefficient was computed to assess the relationship between age and both IMA and HVA. Results: There was a positive correlation between the age of patients presenting for surgery and severity of the disease as measured by both IMA ($r=0.267$ $p<0.01$) and HVA ($r=0.364$ $p<0.01$). The correlation was stronger for the HVA. This was present for both male and female patients. There was good intra-observer reliability with a Cronbachs alpha value of 0.8 for both the IMA and HVA. Discussion: Many factors determine the severity of hallux valgus at the time of presentation for surgery. Increasing age correlated with disease severity. This study benefits from a large number of consecutive patients but as this was a purely radiological study it was not possible to adjust for any possible confounding factors.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36450

PROSPECTIVE RANDOMIZED COMPARATIVE STUDY OF REAMED VERSUS UNREAMED NAILING IN FRACTURE SHAFT OF TIBIA- A SINGLE CENTRE EXPERIENCE

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Introduction: With tibia being one of the most commonly fractured long bones in the body, reamed and unreamed nailing are the two accepted management techniques for these fractures and there is no general consensus as to which is more advantageous than the other. We report our comparative results of managing these fractures with the two treatment options. Methods: 58 patients (42 males, 16 females) with recent open and closed tibial shaft fractures, treated from June 2011 to December 2013, in the mean age 26.5 (21-30) years formed the study group. Techniques, their advantages and disadvantages; time to clinical and radiological union, functional outcomes and complications were compared using the Johner and Wruh's criteria. Results: 30 cases were treated with reamed and 28 with unreamed nailing. Fractures were classified by the AO and Winquist and Hansen classifications. There were 9 open fractures in the reamed and 5 in the unreamed group. The average time to clinical and radiological union in the reamed group was 20.5 and 23 weeks and in the unreamed group was 22.5 weeks and 25 weeks respectively. Complications included nonunion, joint stiffness, screw breakage and knee pain in both groups. The overall outcome was 80% good to excellent results in the reamed group and 72.22% good to excellent results in the unreamed group. Conclusion: Considering the ease of performing the technique and the decreased operative time, unreamed nailing may have an edge over reamed interlocking nailing.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37600

EXCHANGE NAILING FOR LOWER LIMB DIAPHYSEAL FRACTURE NON-UNIONS. ABSENCE OF PERIOSTEAL REACTION IS PREDICTIVE OF FAILURE.

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The aim of this study was to determine whether the absence of periosteal reaction on plain radiographs was predictive of exchange nail failure in lower limb diaphyseal fracture non-unions. The study cohort comprised 46 patients with lower limb diaphyseal non-unions treated by exchange nail surgery. Multiple causes of non-union were found in 23 patients (50.0%) with infection present in 14 cases (30.4%). The main outcome measures were union, number of secondary fixation procedures and time to union. Periosteal reaction adjacent to the non-union site was present in 34 cases (73.9%) and absent in 12 cases (26.1%) at the time of exchange nailing. The median time to exchange nail from primary fixation was 7.7 months. Further exchange procedures were required in seven patients (20.6%) with periosteal reaction and in five patients (41.6%) with no periosteal reaction. There were no significant differences between groups ($p > 0.05$). Union was ultimately achieved in 41 patients (97.6%). The overall median time to union was 9.2 months. Multi-regression analysis indicated that the absence of periosteal reaction on plain radiographs was predictive of failure, along with host factors, Gustilo and Anderson grade and infection ($p < 0.05$). Careful radiographic analysis of lower limb diaphyseal non-union should be undertaken before exchange nailing. The absence of periosteal reaction on plain radiographs is predictive of exchange nail failure.

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Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36969

OUTCOME OF MANAGEMENT OF DISTAL TIBIAL FRACTURES TREATED BY MINIMAL INVASIVE PERCUTANEOUS PLATE OSTEOSYNTHESIS

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We analyzed 25 cases of fractures of the distal tibia at our institute during the time period of 2010 to 2013 which were specifically treated by Minimal Invasive Percutaneous Plate Osteosynthesis (MIPPO) at the Dr R N Cooper Hospital, Mumbai. It was a prospective study where patients were operated for distal tibia by MIPPO technique and subsequently follow-up radiographs were taken to assess healing at the fracture and associated complaints vis-a-vis standard open techniques. The results of the study were assessed using Heflet and Hooper scoring for fracture of the distal tibia. RESULTS :Mean time to union was 18.3 weeks for closed fractures and 20.4 for open fractures .Three patients suffered, one patient suffered implant failure while one patient developed non union which required bone grafting. 68%of patients had excellent results and 88% of patients returned to their previous occupation.

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Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36704

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

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

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Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37613

EVALUATION OF THE RESULTS OF SURGICAL TREATMENT OF DISTAL TIBIAL FRACTURES BY FIBULA-PRO-TIBIA FIXATION

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Introduction : The optimal treatment of distal tibial fractures remains controversial . Plentiful treatment modalities have been described. Soft tissue Complications result either from the injury itself or surgery or both. Approaching the fracture via the lateral window might avoid the soft tissue hazards if the surgery is done thru the medial side of the tibia. The aim of this study is to evaluate the results of surgical treatment of distal tibial fractures by fibula-pro-tibia procedure. Methods: The study included 30 patients with distal tibial fractures presented to El-Hadara University Hospital. All patients completed the study. The mean age was 35.9.11 Patients were females and 19 were males . 50% of patients were manual workers.70% of injuries were due to fall from height while 30% was after road traffic collision. According to AO classification , 7 fractures were extra articular , 23 were partial articular . Regarding the soft tissue condition as described by Tscherne and Goetzen (T&G) classification 8 were type 0,16 were type 1 & 6 were type 2. 40% had associated fractures elsewhere. Results : There was no correlation between the final outcome & the age, sex, mechanism of trauma & associated injury. There was a statistically significant negative correlation between the final outcome & soft tissue condition . superficial infection occurred in 2 cases and they were T&G 2. None of the patients had metal failure . Conclusion: Fibula pro tibia technique could be safely used in treating extra & partial articular distal tibial fractures.

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Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANĂ

Abstract no.: 36699

TREATMENT OF THE COMPLEX PROXIMAL TIBIAL PLATEAU FRACTURES ACCORDING TO THE TRI-COLUMN CONCEPT

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Background: Routine CT scanning of proximal tibial fractures has led to improved understanding of bicondylar fractures and brought in a change in treatment strategies. Objective: To present our experience with complex proximal tibial plateau fractures that affect the posterior column. Material: This study covers 33 patients - 18 females and 15 males treated over a period of 4 years in two trauma centers. The shortest follow-up was 12 months. 18(55%) were caused by high-energy trauma. These fracture patterns defy the commonly used classification schemes. According to 3 column concept (M+L+P/PM+PL/) the patient spread was: M+L+PM+PL in 15(45%) cases; M+L+PM in 3(9%) cases; M+PM+PL in 13(36%) cases and L+PL+PM in 2(6%) cases. According to CT 3D personality of the fractures was: PM splitting in 22(70%) cases; PM comminution 10 (30%) cases; PM depression 5(15%) cases and PL splitting in 2(7%) cases; PL comminution 20(61%); PL depression 23(70%). A posterior approach was utilized in all cases for fracture fixation, combined with an antero-lateral when needed. No patient was diagnosed with vascular or neurological deficit after surgery. Results: The end functional results according to Lysholm knee score were measured as: excellent in 17(52%), very good in 10(30%), and fair in 6(18%) patients respectively. Conclusions: The tri-column concept has been recently supported by routine usage of CT with 3D reconstruction. The posterior approach to proximal tibia reliably allows anatomical reduction and stable fracture fixation. Fractures of the posterior column are challenging injuries and a new algorithm of planning and fixation is needed.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38238

OSTEONECROSIS OF DISTAL TIBIA IN OPEN DISLOCATION FRACTURES OF THE ANKLE

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Introduction: Open ankle dislocation fractures are one of the most severe injuries of the ankle. studies described possibility of posttraumatic osteonecrosis (PON). The mechanism remains unclear. Goal of this study was to evaluate characteristics and correlate with development of PON. Material and methods: 26 patients with open dislocation fractures of the ankle were evaluated retrospectively. We documented personal data, mechanism of injury, detailed injury characteristics (fracture, degree of dislocation, time until reduction, kind of surgery, complications, number of surgeries). Presence of osteonecrosis was examined by radiographs. Results: In 10 out of 26 patients a posttraumatic osteonecrosis of the distal tibia could be shown in midterm follow up. All of these patients showed Weber C fibular fracture type and 80% of them sustained high energy trauma. 86% of patients with open fracture type III according to Gustillo developed osteonecrosis. Additionally all patients with a distinct injury pattern consisting of Weber C fibular fracture type, distinct talus dislocation and high grade soft tissue damage showed osteonecrosis of the distal tibia in the follow up examinations. Patient's characteristics like late joint reduction, postoperative infection or bimalleolar fracture showed no higher proportion of posttraumatic osteonecrosis. Conclusion: In this study we were able to identify clinical manifestations and risk factors for the development of osteonecrosis of the distal tibia. With regard to this early identification of patients with higher risk of osteonecrosis might be possible and additional treatment options can be initialized to protect patients from this process.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36763

SALVAGE SURGERY IN SEVERE OSTEOMYELITIS OF THE ANKLE AND FOOT. THE WALKING PLAFOND

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INTRODUCTION:We present a 66 year-old woman with severe rheumatoid arthritis (from 1995). She came to our clinic for a second opinion, after multiple surgical procedures. She had severe deformities in both feet and ankles. In the left, there was a complete destruction of the hindfoot, a tibiotalar dislocation and severe flat foot. Due to that, she had to walk weight-bearing on the left tibial plafond. It was also complicated with a chronic ulcer.**MATERIALS AND METHODS:**We planned a two staged operation to avoid amputation. In the first, we made a debridement of the chronic osteomyelitis, took culture specimens, inserted antibiotic cement spacer and fixed it with an external fixator. After 6 months, we performed the second stage, a panarthrodesis with a retrograde nail using autologous bone graft and allograft.**RESULTS:**A surgical wound dehiscence appeared with evidence of an infectious process. The patient and our team thought that we had a last chance before below knee amputation. We removed the nail and we performed the last debridement. After two months, she began to walk, without infection and pain.**CONCLUSIONS:**Severe chronic osteomyelitis in rheumatoid arthritis is a difficult issue in foot and ankle surgery. Before amputation, we think that it is very important to try serious salvage treatment in a compliant patient who wants to fight to save the limb. We propose a two-staged operation performed by a multidisciplinary team. Below knee amputation is not always the best choice for our patients.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38142

SCARF OSTEOTOMY FOR CORRECTION OF MODERATE HALLUX VALGUS DEFORMITY

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BACKGROUND: Hallux valgus deformity is a common deformity with many techniques described for its correction. Among these techniques is the scarf osteotomy which is gaining popularity over the past years. **PATIENTS AND METHODS:** Twenty five patients (twenty females and five males) ranging from 23 to 55 years old (mean 37 years) with moderate hallux valgus deformity were treated by scarf osteotomy of the first metatarsal with fixation by two screws. Follow up and evaluation were done using clinical and radiological assessment with measurement of the hallux valgus angle and the intermetatarsal angle on the anteroposterior weight bearing radiograph of the foot. **RESULTS:** After a mean follow up of 27 months (range from 12 to 49 months) twenty four patients have good to excellent results and would do the operation again. The intermetatarsal angle improved significantly from a mean of 16 degrees preoperatively to a mean of 11 degrees postoperatively. The hallux valgus angle improved significantly from a mean of 39 degrees preoperatively to a mean of 12 degrees postoperatively. Complications included recurrence of the deformity in one case, undercorrection in three cases and wound complications in three cases. **CONCLUSION:** Scarf osteotomy is an effective procedure in correcting moderate hallux valgus deformity with low rate of recurrence and complications.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 36908

OUR EXPERIENCE WITH HALLUX VALGUS CORRECTION USING A MINI TIGHTROPE

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Objectives: Hallux valgus is the most common deformity of the great toe. Many traditional forms of osteotomy are available, but none has proven to be superior, despite their aggressiveness. The Mini TightRope (Arthrex Inc.) procedure appears to be a less invasive alternative, and the objective of the present study was to test the hypothesis that the procedure is an effective surgical option for reducing the intermetatarsal angle (IMA) and hallux valgus angle (HVA) in cases of hallux valgus of mild-to-moderate severity. Methods: Four patients (four feet) with hallux valgus underwent the Mini TightRope procedure. All the patients were women, and their mean age was 30.5 years. All patients were reviewed before and after the procedure, with an average post-operative follow-up of 1 year. The IMA, HVA and sesamoid bone position were the radiological indicators of correction. Results: In the four operated patients, the mean IMA decreased from 15.75 to 4.5 degrees and the mean HVA from 31.25 to 5.75 degrees. Conclusion: The Mini TightRope procedure is a simpler, more effective, less invasive surgical option than other procedures and seems to correct IMA and HVA satisfactorily in cases of hallux valgus of mild-to-moderate severity. In view of the small number of cases and short follow-up, further studies with more cases and longer follow-up are needed.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 38186

IOFIX, A NOVEL INTRAOSSEOUS COMPRESSION DEVICE FOR METATARSOPHALANGEAL PHALANGEAL ARTHRODESIS.

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Osteoarthritis of the first metatarsophalangeal joint is a common cause of pain, swelling and stiffness. Although footwear modification, intraarticular injection and arthroplasty are recommended, arthrodesis has been the gold standard treatment for end stage disease. Arthrodesis of the joint can be achieved using screws, staples and low profile plates. The fusion rate is usually good however complications include non-union and soft tissue irritation by the metalwork. The cortical bone bridge in the metatarsal and the proximal phalanx is fragile and can collapse on tightening the screw. Plates are low profile nowadays but can still irritate the soft tissue. They provide stability but no compression across the joint. We present our result of 10 first metatarsophalangeal joint fusion using a unique Intraosseous compression system called the IOFIX. This device consists of a intraosseous titanium post in the metatarsal head. Through the post a lag screw is introduced into the proximal phalanx. The lag screw locks in the x-post and compresses the fusion site simultaneously. Using this intraosseous device surgical exposure can be minimized, uniform compression and stability is achieved . The fragile cortical bone bridge is supported and the device has a zero profile. We believe that no other devise can provide this stability and uniform compression across a joint and be zero profile, resulting in reproducible excellent results.

Date: 2014-11-21

Session: Trauma: Short Oral Presentations Trauma Lower Limb

Time: 14:00 - 15:30

Room: MARACANÃ

Abstract no.: 37208

MECHANICAL ANALYSIS OF A LOCALLY-MADE DELTA FIXATOR CONSTRUCT: AN EXPERIMENTAL STUDY BY E.S.R.J. HOMENA, MD AND L. BONIFACIO, MD

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Objective: To determine the mechanical properties of a locally-made external fixator construct assembled in a “delta” configuration, in providing stabilization for extra-articular proximal diaphyseal tibial fractures (AO 41-A1 and 41-A2). Methods: In this study, 12 unilateral “delta” frame external fixator constructs were constructed on 12 bovine tibia bones, with a laboratory-reproduced proximal diaphyseal fractures (fracture gap of 10 cm). Constructs were then subjected to lateral, anterior, posterior, and axial compressive forces in a universal testing machine. Three trials were conducted for each motion, to produce a more statistical valid result. Results: Highest mean maximum compressive load is with axial compression 619N (RSD 0.40), highest mean displacement prior to yielding occurs in anterior bending 62.7 mm (RSD 0.40), mean maximum bending moment is highest with axial compression 78.6 Nm (RSD 0.40), and with mean lateral bending 1704 Nm/m (RSD 0.60), having the highest mean relative stiffness at the start of yielding. Mechanical analysis for axial rotation was not done, due to inability of the universal testing machine in testing axial rotation. Conclusion: Relative stiffness of our locally-made delta external fixator, is strongest in lateral bending and weakest in anterior bending. Based on this study, the delta fixator construct may have its use in temporary stabilization of proximal diaphyseal fractures (AO 41-A1 and 41- A2), prior to definitive treatment. Thus, it can serve as an alternative external fixator in stabilizing proximal tibia fractures (AO 41-A1 and 41-A2) in third world countries, since it’s cheaper and more locally-available, compared to its western counterparts.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37310

PREDICTIVE VALIDITY OF THE CLASSIFICATION FOR EARLY ONSET SCOLIOSIS (C-EOS): EXAMINING THE TIMING, RATE, AND SEVERITY OF POST-OPERATIVE COMPLICATIONS

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Background: Gaps in the evidence-base and variability in management of EOS have driven improvements in the research infrastructure, including development of the C-EOS. This study examines the ability of the C-EOS to predict timing of VEPTR proximal anchor failure and identify patients at higher risk for complications following growing instrumentation surgery. Methods: 105 patients treated with VEPTR and 254 patients with a minimum of 5 years post-op follow-up from growing instrumentation surgery were identified from 2 multi-center EOS databases. All patients were classified using the C-EOS; by etiology (C: Congenital, M: Neuromuscular, S: Syndromic, I: Idiopathic), major curve angle (1:<20°, 2:20-50°, 3:51-90°, and 4: >90°) and kyphosis (- :< 20°; N: 20-50°; + :> 50°). Outcomes included rate of anchor failure and other device and disease related complications. Results: Survival analysis identified groups with low (C3-), medium (C3N, C3+, M3+), and high (M4N, M4+) risk of rapid VEPTR proximal anchor failure. Of patients with 5 post-op years of follow-up, 75% experienced at least one complication and 13% experienced a complication affecting outcome. The greatest frequency of complications with the highest severity occurred among non-idiopathic, hyperkyphotic classes with large Cobb angles. Conclusion: The ability of the C-EOS to discriminate among patients with varying times to anchor failure and identify subsets of patients which suffer a disproportionate share of complications support its predictive validity and demonstrate its potential use in guiding decision making. Further experience with the C-EOS may allow more tailored treatment, and perhaps better outcomes for patients with EOS.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 36720

QUANTITATIVE T2 MAGNETIC RESONANCE IMAGING COMPARED TO MORPHOLOGICAL GRADING OF THE EARLY CERVICAL INTERVERTEBRAL DISC DEGENERATION AN EVALUATION APPROACH IN ASYMPTOMATIC YOUNG ADULTS

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Introduction: Quantitative MR measurements have been suggested to be more sensitive methods in imaging degenerative changes in discs. However, no previous studies have been evaluated changes in the cervical spine. Further work is required to identify early intervertebral disc (IVD) degeneration in asymptomatic young adults. Methods: Three hundred fifty IVDs from 70 asymptomatic young subjects (mean age, 22.80; range, 18-25 years) underwent 3.0-T MRI to obtain morphological data (one T1-fast spin echo (FSE) and three-plane T2-FSE, used to assign a Pfirrmann grade (I-V)) and for T2 mapping (multi-echo spin echo). Differences in T2 values between sexes and anatomic level were evaluated, and linear correlation analysis of T2 values versus degenerative grade was conducted. Results: Cervical IVDs of healthy young adults were commonly determined to be at Pfirrmann grades I and II. T2 values of NPs were significantly higher than those of AF at all anatomic levels ($P < 0.000$). The NP, anterior and posterior AF values did not differ significantly between genders at the same anatomic level. T2 values decreased linearly with degenerative grade. Linear correlation analysis revealed a strong negative association between the Pfirrmann grade and the T2 values of the NP ($P = 0.000$). T2 values according to disc degeneration level classification were as follows: grade I (>62.03 ms), grade II (54.60-62.03 ms), grade III (<54.60 ms). Conclusion: T2 quantitation provides a more sensitive and robust approach for detecting and characterizing the early stage of cervical IVD degeneration and to create a reliable quantitative in healthy young adults.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 38196

ADJACENT SEGMENT DISC DEGENERATION - RADIOGRAPHIC COMPARISON OF SINGLE LEVEL CERVICAL DISC REPLACEMENT AND CAGE FUSION IN AN AGE-MATCHED PATIENT COHORT

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Introduction: Cervical disc replacement (CDR) is proposed to preserve motion and prevent adjacent level degeneration. We present radiographic comparison of an age-matched cohort of patients undergoing single level fusion and disc replacement. **Methods:** Retrospective review of our prospectively updated database. Data collected for demographics, duration of follow up and post-operative imaging. **Results:** We recruited 96 patients. Forty three were included in the cervical disc group (group 1) and 53 in the cage fusion (group 2). There were 56 males and 40 females. Average duration of follow up was 29 months. In group 1, 4 patients (9.1%) showed changes of degeneration at adjacent levels. Of these 2 showed changes at the proximal level and 2 at the distal level. 2 cases had formation of new osteophytes and 2 had disc height reduction. Six cases (13%) showed ossification at the replaced level. Four had complete bridging of the space and the other two had between 25-50%. In only one of these 6 cases there was no motion at the replaced level. In-group 2, 12 patients (22.7%) showed changes of degeneration at adjacent levels. Of these, 8 showed changes at the proximal level and 4 at the distal level. Twelve cases had formation of new osteophytes and 4 had disc height reduction. **Conclusions:** Based on our early to mid-term findings, we conclude that there is higher rate of adjacent level degeneration after single level cervical discectomy and fusion as compared to cervical disc replacement, however these do not reach significance levels.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37561

POST-MARKET ANALYSIS OF PULSED ELECTROMAGNETIC FIELD (PEMF) STIMULATION USE FOR CERVICAL FUSION

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Introduction: Pulsed electromagnetic field stimulation (PEMF) can be used postoperatively to encourage bone callus formation and enhance fracture union. Methods: This post-market analysis combined a prospective PEMF cohort study with comparison to control subjects from a prior multi-site RCT of the PEMF device. The PEMF cohort included patients who underwent anterior and posterior cervical fusion with allograft, autograft, or both. The prior control group consisted of patients who were treated with the Smith-Robinson technique with anterior cervical plates and allograft. All patients had risk factors for failed fusion, including multi-level fusion and tobacco use. Fusion at 9 months postoperative was compared between groups. Results: Without adjusting for confounders, the PEMF cohort had a significantly higher rate of arthrodesis at 9 months than controls (94.1% vs 65.4%, $p < 0.0001$). After controlling for age, the odds ratio for fusion with PEMF was 13.7 ($p < 0.0001$). Subgroup analysis comparing only those who underwent an anterior procedure with allograft showed an odds ratio of 13.7 ($p < 0.0001$) for fusion with PEMF. After adjusting for smoking status, age, race, gender, and number of levels, further analysis of this subgroup resulted in an odds ratio of 26.1 ($p < 0.0001$) for fusion with PEMF. Conclusions: Patients treated with PEMF stimulation had significantly higher cervical fusion rates at 9 months postoperative than historic controls. This improvement was seen after controlling for type of procedure, graft source, smoking status, age, race, gender, and number of levels fused. This technology continues to show promise for accelerating the time to arthrodesis in anterior cervical fusions.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 36931

PROTECTIVE EFFECTS OF CANNABIDIOL IN THE INDUCED INTERVERTEBRAL DISC DEGENERATION

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Helton DEFINO, Carolina OLIVEIRA

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Abstract Disc degeneration is a multifactorial process and the inflammatory response has been emphasized in the pathogenesis of disc degeneration. Cannabidiol is the main non-psychotropic component of the Cannabis sativa with proven protective properties in many systems. The in vivo effect of cannabidiol on induced degenerated disc of caudal rats was evaluated in this study. Disc injury was induced in the tail of male Wistar rats via a single needle puncture (21-gauge). The magnetic resonance imaging (MRI) and histological evaluation were employed to assess the results. The effects of intradiscal injection of cannabidiol (30, 60 or 120 nmol) injected immediately after lesion were analyzed acutely (2 days) through the MRI. The experimental group that received cannabidiol 120 nmol was resubmitted to the MRI analyses 15 days after lesion/cannabidiol injection, being further analyzed with a histological grading score. Our results showed that MRI and histological analyses detected a significant disc injury induced by the needle puncture. The induced degenerative changes were mitigated by the cannabidiol treatment in a concentration-dependent form. The cannabidiol protective effects on intervertebral disc degeneration observed here may be explained by the anti-inflammatory actions of cannabidiol. Our results, both with a cannabidiol extremely safe profile and its use in other human treatments, suggest a cannabidiol potential therapeutic action in the intervertebral disc degeneration treatment.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 38163

CHANGES OF CONTRALATERAL LUMBAR FORAMEN AFTER TRANSFORAMINAL LUMBAR INTERBODY FUSION WITH Z-CAGE AND UNILATERAL PEDICLE SCREW FIXATION

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Objective: To evaluate changes in the contralateral intervertebral foramen (IF) of fixation and adjacent segments of patients undergoing TLIF with one cage and unilateral pedicle screw fixation (UPSF). **Methods:** 56 consecutive patients with degenerative lumbar disorders undergoing TLIF using one cage and UPSF were retrospectively studied. Preoperative and postoperative sagittal disc angle, coronal disc angle, disc height, lumbar lordosis, foraminal height, and cross-sectional area of intervertebral foramen in contralateral lumbar foramen of fixed and adjacent segments were compared. The correlations between contralateral lumbar foraminal morphologies of fixed and adjacent segments and sagittal disc angle, coronal disc angle and disc height were assessed. **Results:** After TLIF with one cage and UPSF, the whole lumbar lordosis was significantly increased ($p < 0.05$). The disc height, foraminal height, foraminal width, and cross sectional area of the IF were significantly increased in fixation segments ($p < 0.05$). The disc height and foraminal height increased significantly while the foraminal width decreased significantly in adjacent segments after operation ($p < 0.05$). Increase in posterior disc height showed a positive correlation with increases in foraminal height, foraminal width, and cross-sectional area of IF in fixation segments. However, the increase in disc height showed a negative correlation with changes in foraminal width in adjacent segments. **Conclusions:** Lumbar foraminal dimensions on the side contralateral to fixation increased significantly after TLIF with one cage and UPSF, suggesting that TLIF enables indirect decompression of the contralateral nerve root in fixation segment. Increase in disc height was shown to be an important factor to increase contralateral foraminal height in fixation and adjacent segments.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37553

RATES OF COMPLICATIONS AND REQUIRED ADDITIONAL SURGICAL INTERVENTIONS AFTER SURGICAL AND NONSURGICAL TREATMENT IN LUMBAR SPONDYLOSIS: A SYSTEMATIC REVIEW WITH META ANALYSIS

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Introduction: Treatment of lumbar degenerative disc disease (DDD) remains a complex clinical and economic concern. Methods: This systematic review with meta-analysis included RCTs comparing lumbar arthrodesis (LA) with other interventions in adults with lumbar DDD. Complication rates (CR) and additional surgical treatment at 12, 24, or >24 months were analyzed. Results: Of 1411 studies, 26 RCTs (4949 participants) were included. The studies investigated 1-2 level LA, total disc replacement (TDR), decompression without arthrodesis (DC), and nonsurgical treatment (NST). The following pooled CRs were defined: LA, 25.4%; TDR, 17.9%; and NST 2.7%. CRs were higher after LA than after TDR, the pooled OR=2.1, $p=0.001$. Complications typical for LA included pseudarthrosis, autograft donor site pain, and loss of disc height. CRs after LA versus NST were not significantly different. The following pooled rates of additional surgery were defined: LA, 15.8%; TDR, 7.8%; DC, 11.2%; and NST, 22.8%. Comparative analysis did not reveal significant differences between rates of additional surgery after LA versus TDR, or LA versus DC; however, the rate of additional surgery after LA was significantly lower than that after NST: the pooled OR=0.3, $p=0.032$, but heterogeneity was high. Conclusions: LA was associated with a higher complication rate than TDR at 2 years postoperative, with a high level of evidence. However, the rate of additional surgery was not significantly different between LA, TDR, or decompression. The rate of surgical treatment 2-4 years after NST was significantly higher than that after LA, with a moderate level of evidence.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37551

LONG TERM PATIENT-CENTERED CLINICAL OUTCOMES OF LUMBAR ARTHRODESES IN DEGENERATIVE DISC DISEASE: A SYSTEMATIC REVIEW WITH META ANALYSIS

Evalina BURGER, Andriy NOSHCHENKO, Emily LINDLEY, Christopher CAIN, Vikas PATEL

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Introduction: Treatment of lumbar spondylosis is a complex clinical and economic concern for patients and health care providers. The purpose of this study was to 1) evaluate patient-centered clinical outcomes after lumbar arthrodesis, with or without decompression for lumbar spondylosis, and 2) compare these outcomes to those of alternative treatments, including arthroplasty and nonsurgical methods. Methods: This systematic review with meta-analysis included RCTs comparing 1-2 level lumbar arthrodesis with other interventions in adults with lumbar DDD. Patient-centered clinical outcomes before treatment and at 12, 24, or >24 months follow-up, and rate of additional surgical treatment were analyzed. Results: Of 1411 studies, 38 RCTs (5738 participants) were included. Despite the use of different patient-centered clinical outcome scales, all studies showed moderate to strong treatment effects of lumbar arthrodesis at 12, 24, and 48-72 months. The level of evidence was moderate at 12 and 24 months and low at 48-72 months. The pooled long-term treatment effect of lumbar arthrodesis exceeded those of nonsurgical treatment ($p < 0.0001$) with a moderate level of evidence, and of decompression without fusion ($p = 0.005$) with a low level of evidence. The treatment effect of lumbar arthrodesis showed a small inferiority versus arthroplasty at 12 and 24 months follow up ($p < 0.001$), but not after 24 months postoperative. Conclusions: This review indicates that surgical stabilization of the lumbar spine is an effective treatment for lumbar spondylosis, in particular for patients with severe chronic low back pain that has been resistant to three or more months of conservative therapy.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37176

A MINIMALLY INVASIVE POSTERIOR LUMBAR INTERBODY FUSION USING PERCUTANEOUS LONG ARM PEDICLE SCREW SYSTEM FOR DEGENERATIVE LUMBAR DISEASE

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Objective : To evaluate the therapeutic efficacy of patients with lumbar degeneration and

instability treated with percutaneous pedicle screw fixation and minimally invasive lumbar

interbody fusion. Methods : 53 patients with lumbar degeneration and instability underwent operation of percutaneous pedicle screw fixation and minimally invasive lumbar interbody

fusion and followed-up for more than three month were selected in our hospital from November, 2012 to December, 2013. The average time of each pedicle screw fixation, X ray exposure times, the blood loss of intraoperative and post-operation, reduction ratio, hospitalization time, and complications were recorded, the comparison of preoperative and postoperative VAS and ODI score were also

analyzed. Results : The average insertion time each pedicle screws was 21.92 ± 7.52 min, X-ray exposure times for each pedicle screw were 7.99 ± 2.45 times, intraoperative blood loss was 81.98 ± 21.76 ml in each segment decompression and 58.62 ± 23.79 ml in after operation. Hospitalization time was 8.8 ± 2.9 days. VAS scores were 7.14 ± 0.79 before operation, 5.19 ± 0.81 and 2.67 ± 0.66 in 3 day and 3 months after operation respectively. ODI score was 55.88 ± 11.4 before operation, 47.38 ± 9.38 and 35.76 ± 4.50 in 3 days and 3 months after operation respectively. No case of nerve injury, leakage of cerebrospinal fluid, hematoma, wound infection and other complications was detected. Conclusion : Percutaneous pedicle screw fixation combined with minimally invasive interbody fusion is a safe, effective, feasible minimally invasive spine operation, with worthy for spreading.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 36679

LUMBAR SPINE DYSFUNCTION (LSD)

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Introduction: Lumbar spine dysfunction (LSD) has been hardly evaluated with patients' self-assessment. The purpose of this study was to evaluate if decompression and fusion for lumbar spinal stenosis (LSS) could improve LSD, which was extracted from the self-administered questionnaire of the Japanese Orthopaedic Association Back Pain Evaluation Questionnaire (JOABPEQ). Methods: Eighty-seven LSS patients, who underwent decompression and fusion, were included. JOABPEQ, which consisted of 5 domains including pain-related disorders, LSD, gait disturbance, social life dysfunction and psychological disorders, patients' satisfaction and radiographs were evaluated at 1-year follow-up. Patients, of which acquired point of LSD of JOABPEQ was more than 20 points, were classified as the effective group, and compared with the others. Preoperative factors, which influenced postoperative LSD, were examined. Results: Thirty-five patients were classified in the effective groups. There were no significant differences in demographic and radiographic data between the effective group and others. Pain-related disorders, LSD and social life dysfunction were serious preoperatively in the effective group, compared with the others (24 vs. 47, 35 vs. 65, and 27 vs. 35 points, respectively, $P < 0.05$). Acquired points of pain-related disorders and social life dysfunction (52 vs. 16 and 40 vs. 22 points, respectively) and patients' satisfaction were better postoperatively in the effective group than the others ($P < 0.05$). Utilizing multiple regression analysis, a significant model that acquired points of $LSD = 57.4 + (-0.81 \times \text{preoperative LSD})$ was obtained ($R = 0.7$, $P < 0.01$). Conclusion: Preoperative LSD can affect its improvement, which were related to clinical outcomes in LSS patients treated with decompression and fusion.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37247

THE USE OF 3D-VIEW SYSTEM COMBINED WITH WILTSE APPROACH IN THE TREATMENT OF THORACOLUMBAR BURST FRACTURES

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Objectives: To investigate the clinical outcome of the use of 3D-View system combined with Wiltse approach in the treatment of thoracolumbar burst fractures. Methods: From March 2009 to March 2011, 35 consecutive patients were enrolled in this study. T11 burst fractures in 8, T12 burst fractures in 15, L1 burst fractures in 10, L2 burst fractures in 2. Single level fixation in 16, two level fixation in 19. Recording the height of injured vertebral body, operation time, blood loss, complications, intractable low back pain (visual analogue scale, VAS), and the incidence of union. Results: Average length of incision is 4.8cm (3 ~ 5.8cm), average blood loss is 85ml (65 ~ 120ml), mean operation time is 70 minutes (50 ~ 95min), and mean follow-up time is 17.6 months (12 ~ 24 months). The average height of the injured vertebrae is raised from 2.2cm to 3.1cm. In the last follow-up, the incidence of union is 0. one case suffered from intractable low back pain, the VAS of the rest 34 cases decreased from preoperative 8.5 to postoperative 1.2. the angle of the thoracolumbar decreased from preoperative 16.2° to postoperative 6.9. Conclusion: The advantage of this operative method as follows: we can discover the facet joint directly by the Wiltse approach, less blood loss, less injury. Moreover, we can attain better orthopaedic result.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37868

ONE-STAGE TRANSPEDICULAR DECOMPRESSION, POSTERIOR SEGMENT RESECTION WITH PEDICLE INSTRUMENTATION, INTERBODY FUSION AND POSTEROLATERAL FUSION IN EARLY TUBERCULOSIS OF DORSAL SPINE

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Introduction: The purpose of this study is to evaluate the clinical outcome of One - stage trans-pedicular decompression, posterior segment resection with pedicle instrumentation and combined inter body and posterior fusion in early dorsal spinal tuberculosis. Method: 25 patients of dorsal spinal tuberculosis who had destruction of one or two vertebral body with /without kyphosis were included in the study. After midline vertical incision, pedicle screws were put at desired levels. Bilateral trans-pedicular decompression, debridement of diseased tissue from the intervertebral disc space and resection of posterior segment (lamina and spinous process) of destroyed vertebra was done. After putting the rods the compression was applied to correct the kyphosis as well as achieving interbody contact. And finally graft was placed for posterolateral fusion before closure. Chemotherapy was supplemented as per standard protocol .All patients were followed up average of 30.3 months. Result: The disease was cured in all .Interbody fusion was achieved in all cases. Posterolateral fusion was appreciated in all except in two cases, but clinically there was no pain. The preoperative average kyphotic angle was 38 degree (range 20-65) and postoperative angle was 22 degree (range 15-40) .The long term average loss of kyphotic angle was 4 degree. Conclusion: To prevent kyphosis and delayed neural complication one stage trans-pedicular decompression, Single level posterior resection, and pedicle screw fixation is an alternative treatment for early dorsal spinal tuberculosis with severe destruction.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 36553

SURGERY IN POTT'S DISEASE - EXPERIENCE OF 135 CASES

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Introduction: Tuberculosis of the spine is the most common and dangerous form of TB infection accounting 50 to 60% of osseous tuberculosis. The diagnosis is difficult and it commonly presents at an advanced stage. Delay in establishing diagnosis and management cause spinal cord compression and spinal deformity. Patients mostly present with lower limb weakness, Gibbus, pain, palpable mass and Kyphotic deformity in long standing cases. Objectives: To evaluate the efficacy and clinical outcome of surgical treatment of thoraco-lumbar tuberculosis treated by different approaches consisting decompression surgery, autogenous bone grafting and anti-TB chemotherapy. Vertebral body collapse from TB may be misdiagnosed as compression fracture. Methods: 135 patients with tuberculosis of the cervical, thoracic and lumbar spine with moderate to severe cord compression were studied. Variable degrees of neurological deficit with deformity were treated at NITOR and BSOH, Dhaka in the period from 2003 to December 2013. Anterolateral decompression and autogenous strut bone grafting with simultaneous fixation by screws and rods were done. Posterior decompression, posterior interbody and posterolateral fusion by bone graft with stabilization by transpedicular screws and rods. Appropriate anti TB drugs were given to all patients for 18-24 months. The postoperative follow-up period was 12 months (range 3 months to 21 months). Results: 99 cases with neurological deficits recovered totally or partially. No neurological improvement occurred in 16 cases with paraplegia. 13 were lost from follow-up. X-ray showing bony fusion was achieved in all cases in 6 months (ranging 4-8 months). There was no recurrence. 7 developed bed sore postoperatively. Conclusion: For patients with spinal tuberculosis anterior debridement, auto graft bone fusion, anterior or posterior fixation appears to be effective in arresting disease, correcting kyphotic deformity and maintaining correction until solid spinal fusion.

Date: 2014-11-21

Session: Spine: Short Oral Presentations Spine I

Time: 16:00 - 17:30

Room: MARACANÃ

Abstract no.: 37729

EFFECTS OF VERTEBRAL COLUMN DISTRACTION ON

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Background: Spinal cord injury can occur following surgical procedures for correction of scoliosis and kyphosis, as these procedures produce lengthening of the vertebral column. Methods: Global osteotomy of all three spinal columns was performed on the ninth thoracic vertebra of sixteen pigs. The osteotomized vertebra was distracted until transcranial electrical stimulation-motor evoked potential (TES-MEP) signals disappeared or decreased by >80% compared with the baseline amplitude; this was defined as spinal cord injury. The distraction distance at which spinal cord injury occurred was measured, the distraction was released, and the TES-MEP recovery pattern was observed. A wake-up test was performed. No animals exhibited complete recovery according to TES-MEP testing, eleven exhibited incomplete recovery, and five exhibited no recovery. During the two days of observation, all eleven animals with incomplete recovery showed positive responses to sensory and motor tests, whereas none of the five animals with no recovery had positive responses. Conclusions: Parallel distraction of approximately 3.6% of the thoracolumbar length after global osteotomy resulted in spinal cord injury and histological evidence of spinal cord damage. The pattern of recovery from the spinal cord injury after release of the distraction was consistent with the degree of axonal damage. Axotomy was observed in animals that exhibited no recovery on TES-MEP, and only haemorrhagic changes in the white matter were observed in animals that exhibited incomplete recovery.

Date: 2014-11-22

Session: Spine: Short Oral Presentations Spine II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37465

RESULTS OF POSTERIOR HEMI VERTEBRECTOMY IN POST TUBERCULAR SPINAL INFECTION

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All tubercular spine infection heals invariably with kyphotic deformity which causes early or late onset of variable degree of neurological claudication and/or deficit in these patients. This deformity can be prevented with surgical intervention during healing process. The authors are sharing their experience of preventing the deformity in 13 cases who were treated from January 2009 to December 2011. There was 8 male and 5 female with age ranging from 25 to 43 years. All patients were presented with varying degree of neurological deficit. Posterior half of most affected vertebra was removed. Affected spinal segment was fixed with the transpedicular screws. Transpedicular and posterolateral bone grafting was done. All patients were given bed rest for 6 weeks and anti-tubercular treatment (ATT) for one year. All patients recovered neurologically. Infection healed in all cases. Loss of correction was observed in 4 patients varying from 3 to 5 degrees. It is attributed to local osteopenia due to infection. All tubercular spine infection heals invariably with kyphotic deformity. There are mainly two ways to deal with these above mention problems. Either lengthen the anterior segment or shorten the posterior segment are the only solutions to correct the deformity and to maintain the corrected deformity. Posterior hemi vertebrectomy can be done to correct post tubercular kyphosis to avoid early and late onset deformity and to prevent pressure on cord and resultant neurological claudication and or deficit.

Date: 2014-11-22

Session: Spine: Short Oral Presentations Spine II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37244

THE LONG-TERM FOLLOW-UP OF THE OUTCOME OF SURGICAL TREATMENT FOR SPINAL TUBERCULOSIS

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Objectives: The analysis of effect about surgical treatment on spinal tuberculosis, investigation the causes of failure cases and the strategies. **Methods:** 256 patients with spinal tuberculosis treated surgically between Des 2009 to April, 1997. 145 cases involved in one segment, 78 in two segments, 34 in three segments. There was 17 in cervical, 14 in cervicothoracic, 42 in thoracic, 57 in thoracolumber, 126 in lumber. 186 lesions happened in the vertibra, 47 in appendix, 23 in vertebra and its appendix. **Results:** 3 cases had pneumothorax, 2 cases had hemothorax, and one had lumbar spinal canal hematoma. Skin antrum occurred in 11 cases, breaking of internal fixation in 8, losing or prolapsing in 5. Graft delayed union emerged in one in 3~6 months, non-union in one, collapse in 12, aggravated segmental kyphosis in 4. There were 4 cases whose ASIA scale is A, of them, 2 returned to B, 1 to C, 1 didn't improved; there were 19 cases whose ASIA scale is B, 8 of them returned to C, 3 to D, the others had no improvement; 23 of C, 11 to D, 8 to E; 29 of D, 27 to E.

Conclusions: Radical debridement, graft fusion and solid internal fixation were the main treatments of spinal tuberculosis, operation program should stick to individuation, which helped to reduce the complications.

Date: 2014-11-22

Session: Spine: Short Oral Presentations Spine II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37167

ONE-STAGE POSTERIOR DEBRIDEMENT, LUMBAR INTERBODY FUSION AND INSTRUMENTATION IN TREATMENT OF LUMBAR SPINAL TUBERCULOSIS

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The aim of this study is to research the clinical outcomes of surgical management by one-stage posterior debridement, lumbar interbody fusion and instrumentation. Thirty-three patients who suffered lumbar tuberculosis were treated in our center from January 2008 to December 2010. The area suffered from T11 to L5, 13 cases suffered from thoracolumbar tuberculosis and 20 cases suffered from lumbar tuberculosis. In the preoperative, the VAS score was 6.0 ± 1.1 , kyphosis angles range from 5 to 50 °, the average was 20.2 °. 9 patients suffered from significant spinal cord nerve damage (three cases were Frankel C level, six cases were Grade D level). The average operative duration and blood loss were 171 ± 38 min and 520 ± 46 ml. The average pre-treatment VAS score was 6.0 ± 1.1 , which became 1.0 ± 0.3 within 3 months. All patients healed without chronic sinus formation, no recurrence of tuberculosis. Among nine cases of spinal cord injury patients, 8 patients fully recover, 1 patients restored to Frankel D stage. The kyphosis was significantly corrected after surgical management, which was 3-15 ° at final follow-up. Surgical management by one-stage posterior debridement, lumbar interbody fusion and instrumentation for lumbar tuberculosis is feasible and effective. It can be used to correct and prevent kyphosis, and promote recovery of neurological function, benefits also include the trauma is relatively small and less bleeding. Funding from the National Natural Science Foundation of China (grant no. 81272022) was received in support of this work.

Date: 2014-11-22

Session: Spine: Short Oral Presentations Spine II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 38488

MARKERS OF RECOVERY OUTCOMES IN AN IRISH ADOLESCENT IDIOPATHIC SCOLIOSIS (AIS) COHORT FOLLOWING SPINAL FUSION SURGERY: A HISTORICAL PROSPECTIVE STUDY WITH FOLLOW-UP TO 2 YEARS

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Our Lady's Children's Hospital, Dublin (IRELAND)

This retrospective study aimed to investigate factors significantly correlated with recovery outcomes in an Irish AIS cohort following spinal fusion surgery. Method: 41 AIS subjects who underwent one-stage spinal fusion surgery during 2010 (Ireland) were identified and demographic, surgical and anthropometric information collected. Follow-up data on: time to achieving preoperative weight, a normal eating pattern, sleeping pattern, return to school and exercise were elicited. Non-parametric Spearman correlation coefficient (r_s) was used in all analyses using SPSS. RESULTS: The presence of major postoperative complications ($r_s = 0.431$, $P < 0.01$) and preoperative Cobb angle ($r_s = 0.383$, $P < 0.05$) were positively correlated with duration of hospital stay (median 10 days). Increasing age was positively correlated with longer time to achieving preoperative weight ($P < 0.05$), a normal sleeping pattern ($P < 0.01$) and part-time return to school ($P < 0.05$). After controlling for preoperative Cobb angle, a negative partial correlation between weight z-score difference from admission to hospital discharge and time to return to preoperative weight ($r_s = -0.684$, $P < 0.01$), resuming part-time exercise ($r_s = -0.671$, $P < 0.01$), as well as full-time exercise ($r_s = -0.406$, $P < 0.05$), was found. CONCLUSION: Increasing age, preoperative Cobb angle and no. major postoperative complications were associated with a delayed functional recovery in our AIS cohort. Mitigating postoperative weight loss \pm nutritionally supplementing this group post hospital discharge with a view to improving functional recovery is an area worthy of future research.

Date: 2014-11-22

Session: Spine: Short Oral Presentations Spine II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 38409

SURGICAL STRATEGIES FOR IDIOPATHIC SCOLIOSIS IN THE ADOLESCENTS AND YOUNG ADULTS ACCORDING TO THE ACTIVITY CENTRE OF THE CURVES

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Majority of publications show series from Particular techniques for treating idiopathic scoliosis. We would like to study the outcomes of the operated cases not from a specific technique point of view but from the activity centre of the curves. We will limit our work to only double curve cases. With an average age of 7 years(2-15 years old).We analyse the progress of trunk balance, the horizontality of the shoulders and the obliquity of the intervertebral disc underlying the last instrumented vertebra.74 deformities were studied, subdivided into three groups,25 double thoracic curves,32 double curve thoracic predominant, and 17 double curve lumbar predominant. The first two groups were operated by posterior approach, the third group by anterior approach. In the first Group the shoulders were horizontal in 22 cases, and the disc never been oblique underlying the instrumentations. Among the second group they had no shoulder problems, the balance of the trunk is good in 27 patients, with only 5 discs oblique. In the third group, only one trunk is unbalanced and one disc is oblique. The analysis of our series shows that when the disc is oblique, there is always an error of interpretation in the activity centre of the curves. In the last years, many publications about the selective fusion had inconsistent results with LENKE classification, and sometimes, difficulty to put on the cases inside this classification, therefore, to determine the strategic operations and the level of instrumentation. No article speaks about the activity centre of the curves but this will allow us determine the surgical strategy and the level of instrumentation without even considering the bending tests or radiographies in traction.

Date: 2014-11-22

Session: Spine: Short Oral Presentations Spine II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 36821

EXPERIENCE OF TREATMENT OF SCOLIOSIS WITH CDI IN UZBEKISTAN

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Introduction. Treatment of scoliotic deformities by CDI procedure remains pertinent. We began this technology in our clinic to use 9 years ago. Material. For the first seven years produced 96 operations together with experienced professionals from other countries. Over the past 2 years performed 57 independent operations. The age of patients from 12 to 25 years. The magnitude of the main arc from 52 to 1350. Technology was used most in idiopathic, rarely in congenital scoliosis (15 cases). At first, we used fixation using hooks and then went on fixing the lumbar vertebrae pedicle screws, after that started to apply fully screw system. In case of mobile deformities we used posterior screw system («all-pedicle screws»). In rigid thoracic deformations, we used hybrid variant posterior instrumentation. Results. In all cases, deformity correction achieved, on average 76 %. Neurological complications after independent operations were observed. Duration of surgery decreased from 6hours to 4hours. The magnitude of intraoperative blood loss also decreased from 1000 ml to 650 ml. Conclusion: before starting independent operations in scoliosis correction surgery, long-term effort was required under the guidance of experienced professionals. In severe strains is preferable to use a hybrid system, with mobile scoliosis screw system gives excellent results.

Date: 2014-11-22

Session: Spine: Short Oral Presentations Spine II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 38489

SURGERY IN ADOLESCENT IDIOPATHIC SCOLIOSIS: FACTORS ASSOCIATED WITH POSTOPERATIVE COMPLICATIONS

Patrick KIELY

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Introduction: This Irish retrospective cohort study aimed to report on postoperative complication rates and their associated factors in an adolescent idiopathic scoliosis (AIS) cohort following spinal fusion surgery. Methods: All 37 eligible AIS subjects who underwent one-stage posterior spinal fusion surgery during 2010 demographic, surgical, postoperative and anthropometric data recorded. Results: In this AIS cohort, the median major preoperative curve was 61 degrees (n = 26 single major; n = 11 double major curves) and this decreased to a median of 16 degrees post-surgery 27 patients experienced 'any' postoperative complication, 34 minor complications were experienced by 27 patients. No. of minor postoperative complications was significantly positively correlated with: no. RBC units transfused (rs = 0.516, P = 0.001), major preoperative curve degree (rs = 0.329, P < 0.05), operative duration (rs = 0.389, P < 0.05), estimated blood loss (rs = 0.339, P < 0.05) and preoperative APTT level (rs = 0.380, P < 0.05). Younger age was significantly correlated with a higher frequency of minor complications (rs = -0.473, P < 0.01). At hospital admission, seven cases (19%) were classified as being acutely malnourished (< 90% weight for height); 24% had a body mass index (BMI) < 25th centile. Of the patients who experienced any complication, 22% were considered acutely malnourished on admission (n = 6). By contrast, of those who did not experience any complication, 90% of these cases were classified as being at low/no risk of malnutrition on admission (n = 9).

Date: 2014-11-22

Session: Spine: Short Oral Presentations Spine II

Time: 08:30 - 10:00

Room: MARACANÃ

Abstract no.: 37503

MULTI-SEGMENTAL POSTERIOR INSTRUMENTATION WITH CORRECTIVE FUSION FOR DEGENERATIVE LUMBAR SCOLIOSIS

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Introduction: Surgery for degenerative lumbar scoliosis remains challenging for spine surgeons even with the application of pedicle screw instrumentation. This retrospective study assesses the outcomes of multi-segmental instrumentation with corrective PLIF for degenerative lumbar scoliosis (DLS). Methods: From January 2007 to December 2012, 20 patients with DLS (cobb angle $\geq 20^\circ$) were treated with multi-segmental corrective PLIF used excised only local bone and PLF used allografted bone. Mean age of the 13 females and 7 males was 68.1 years. Clinical and radiographic outcomes were retrospectively reviewed for each case at a minimum follow up of 8 months (median follow-up, 29.0m). Estimated blood loss, duration of Operation, Japanese Orthopaedic Association (JOA) score of pre-, post-operation, the rate of improvement in the JOA score, perioperative complication, Cobb angle, clear zone around pedicle screw and bony union were evaluated. Results: The mean blood loss was 1221.5 ± 565 ml, per level 331.4 ± 146 ml, and the mean operative time was 463.7 ± 75 minutes, per level 127.1 ± 21 minutes. The mean JOA score was 6.0 ± 2.0 points before surgery, and improved to 18.0 ± 3.0 points at the latest follow-up. The mean rate of improvement was 51.2% at latest follow-up. No perioperative deaths or major medical complications occurred. The average lumbar scoliosis angles were significantly less than preoperative angles (12.4 vs 26.1 degrees; $p < 0.01$). Although seven patients had the clear zone around pedicle screw at 3~6 months after surgery, all patients exhibited solid bony fusion at final follow-up. However, we should pay attention to the development of adjacent segmental degeneration.

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Session: Spine: Short Oral Presentations Spine II

Time: 08:30 - 10:00

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Abstract no.: 37683

A NEW METHOD OF ASSESSING DYNAMIC SPINAL SAGITTAL BALANCE

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The importance of sagittal balance of the spine has become increasingly recognised in the assessment of spinal pathology. Parameters are commonly measured on static standing lateral radiographs. Measurement of the pelvic incidence, sacral slope, lumbar lordosis and thoracic kyphosis etc, yield valuable information but tell us little about dynamic sagittal alignment. We have developed a protocol to quantify dynamic sagittal balance during gait using a motion analysis system. This camera based system can track and record motion of the limbs and trunk. The spine was modelled in three segments. 100 subjects were analysed during walking gait, squatting and stepping. Dynamic data were compared to standard measurements on long lateral radiographs. The system could not replicate accurate measurement of pelvic incidence, pelvic tilt or sacral slope. Tracking of the position of the head over the centre of mass could be reliably and reproducibly measured during gait. Position of the centre of the head in relation to the femoral heads, knees and ankles yielded reproducible measurements of dynamic sagittal alignment. These data appeared to correlate well with static radiographic measurements but statistical comparison of these two different methods was not possible. In patients who had surgery to correct sagittal imbalance, the system was clearly able to measure that change. This method is at a very early stage of development but shows definite potential for non-invasive dynamic measurement of spinal sagittal balance.

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Session: Hip: Short Oral Presentations Hip II

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 37594

COMPLICATIONS AND MORTALITY IN CHRONIC RENAL FAILURE PATIENTS UNDERGOING TOTAL JOINT ARTHROPLASTY: A COMPARISON BETWEEN DIALYSIS AND RENAL TRANSPLANT PATIENTS

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INTRODUCTION: There is a paucity of large studies comparing chronic kidney disease (CKD) and end stage renal disease (ESRD) versus non-CKD/ESRD patients undergoing TJA. This study aims (1) to identify in-hospital complications and mortality in CKD/ESRD and non-CKD/ESRD patients, and (2) to compare in-hospital complications and mortality between dialysis and renal transplantation patients undergoing TJA. **METHODS:** Using the ICD-9 diagnosis and procedure codes, we queried the Nationwide Inpatient Sample database for patients with and without the diagnosis of CKD/ESRD undergoing primary or revision total knee or hip arthroplasty from 2007 to 2011. The same coding system was used to determine in-hospital complications. There were 38,308 renal failure and 978,378 non-CKD/ESRD arthroplasty cases. Further, the renal failure group was divided into a renal transplant group (n=1,055) and dialysis group (n=1,747). **RESULTS:** In multivariate analysis, CKD/ESRD was associated with greater risk of surgical site infection (SSI) (OR= 1.4, 95% CI: 1.3-1.5; p <0.001), wound complications (OR=1.1, 95% CI: 1.0-1.2, p= 0.01), transfusions (OR= 1.6, 95% CI: 1.5-1.6; p < 0.001), deep vein thrombosis (OR=1.2, 95% CI: 1.0-1.4, p=0.03) and mortality (OR= 2.1; 95% CI: 1.8-2.5; p <0.001) than non-CKD/ESRD patients. Dialysis patients had higher rates of SSI (p <0.001), wound complications (p=0.002), transfusions (p < 0.001) and mortality (p=0.002) compared to renal transplant patients. **DISCUSSION AND CONCLUSION:** Our findings emphasize the importance of CKD as a predictor of clinical outcome in TJA. Appropriate CKD patients who are renal transplant candidates may benefit from transplantation prior to TJA if they are on dialysis.

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Session: Hip: Short Oral Presentations Hip II

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38310

**FRACTURE OF THE FEMORAL STEM AFTER HIP ARTHROPLASTY:
TECHNIQUES OF REMOVAL AND SUBSEQUENT MANAGEMENT**

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The fracture of the femoral stem after Hip Arthroplasty is a rare complication. The removal of broken implants in such cases is as difficult as it is to revise. We report 5 cases of broken femoral components after Hip Arthroplasty (2 Uncemented Total Hip Arthroplasty, 2 Cemented Hemiarthroplasty and 1 Austin Moore prosthesis). We discuss the possible mechanisms of failure in these cases, our techniques of removal of the broken implants and their management thereof. All the cases were revised via the convenient and routine posterior approach with the patient in lateral position. All the five cases are doing well after the Revision surgery. We have mentioned the potential risk factors that are important for the orthopaedic surgeons to keep in mind and would be a helpful tool in preventing such complications.

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Session: Hip: Short Oral Presentations Hip II

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Room: MARACANÃ

Abstract no.: 38206

REVERSED LC-DCP FIXATION FOR VANCOUVER TYPE B AND C PERIPROSTHETIC FEMORAL FRACTURES AND FEMORAL SHORTENING OSTEOTOMY AROUND TOTAL HIP ARTHROPLASTY

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Purpose: The purpose of this study is to present the clinical and radiographic outcome after fixation for periprosthetic fracture with Vancouver type B and C and femoral shortening osteotomy around total hip arthroplasty using reversed LC-DCP. **Materials and Methods:** From January 2003 to December 2011, fifteen patients underwent internal fixation using reversed LC-DCP ("innerside-out"): According to the Vancouver classification, eleven periprosthetic femoral fractures were classified into type B1 in two, type B2 in one, type B3 in four and type C in four patients, respectively. The other four fixations using identical plate were performed during simultaneous femoral shortening osteotomy around total hip arthroplasty. Periprosthetic fracture including shortening osteotomy developed intra-operatively in 10 patients and during follow-up after arthroplasty in 5 patients. There were 4 male and 11 female patients with an average age of 55.9 years (range, 22 to 78) at the time of index operation. The mean follow-up period was 37.4 months (range, 6 to 89 months). Addition of cancellous allogeneic bone chip was performed in 11 patients. **Results:** All patients obtained radiographic bone union at an average of 6.6 months (range, 2 to 12). At the final follow-up, fourteen patients ambulated independently while one patient could walk with the use of crutch. Dislocation was observed in one hip. **Conclusion:** Fixation with the use of reversed LC-DCP could be a cost-effective alternative for periprosthetic fracture with Vancouver type B and C and femoral shortening osteotomy around hip arthroplasty.

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Session: Hip: Short Oral Presentations Hip II

Time: 10:30 - 12:00

Room: MARACANÃ

Abstract no.: 38126

MINIMALLY INVASIVE TOTAL HIP REPLACEMENT VIA THE ANTEROLATERAL APPROACH IN THE SUPINE POSITION

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BACKGROUND: MIS total hip arthroplasty (THA) procedures potentially reduces operative trauma, which is expected to improve recovery and rehabilitation. We presently perform total hip arthroplasty using minimally invasive techniques via an anterolateral modification of the Watson-Jones approach. This approach is performed in the supine position. It also involves a modified operative technique which preserves the pelvic trochanteric muscles and extends the release of the hip capsule. **OBJECTIVE:** To compare the clinical results of the minimally invasive THA with anterolateral approach and the traditional THA with posterolateral approach. **METHODS:** we compare 120 conventional total hip replacements with 120 procedures performed using the anterior minimally invasive procedure in terms of blood loss, the duration of the operation and complications. **RESULTS AND CONCLUSION:** The skin incision length varied between 7 and 12 cm with the MIS technique, compared to 15 to 22 cm with the conventional procedure. Both groups were identical to average blood loss (haemoglobin on 10th post-operative day: minimally invasive group, 110.0 g/L; conventional group, 108.0 g/L) and the duration of the procedure (minimally invasive group, 60 minutes; conventional group, 68 minutes). The position of the implanted components correlated with the pre-operative planning with regard to medial head offset, centre of rotation of the hip, and leg length, and was as satisfactory as that observed with the conventional procedure. None dislocations in minimally invasive group compared with 5 dislocations in conventional group. MIS hip had a low rate of complications, and did not adversely impact the technical success of the procedure.

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Abstract no.: 36748

SUBTROCHANTERIC FEMORAL SHORTENING OSTEOTOMY IN TOTAL HIP ARTHROPLASTY FOR DEVELOPMENTAL DISLOCATION OF THE HIP, COMPARISON OF TWO METHODS

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Two surgical techniques for subtrochanteric femoral shortening and derotation in total hip arthroplasty for high-riding developmental dislocation of the hip are compared , one uses a transverse osteotomy and standard stem with fixation by plate and the other one, step cut osteotomy and distal fixation with fluted stem ,. Eight patients with plate fixation and 12 patients with step cut osteotomy were followed for an average of 22 months (range, 18-40 months). Good to excellent results were obtained in 68% of patients in plate group and 88% in step cut group by Harris hip score. Six of 8 osteotomies (75%) demonstrated radiographic evidence of healing at an average of 5 months. One patient had an asymptomatic non-union of the osteotomy site but still had a good overall clinical result. Another patient suffered fatigue failure of a distally ingrown porous device, which necessitated revision total hip arthroplasty 18 months after surgery. In step cut group, there was no non-union. Subtrochanteric osteotomy in total hip arthroplasty for developmental dislocation of the hip allows for acetabular exposure and diaphyseal shortening while facilitating femoral derotation but fixation method is important. This study shows better results in step cut osteotomy.

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Session: Hip: Short Oral Presentations Hip II

Time: 10:30 - 12:00

Room: MARACANĂ

Abstract no.: 37584

THE IMPACT OF FEMORAL NECK RESECTION LEVEL AND PROXIMAL FEMORAL SHAPE ON LEG-LENGTH DISCREPANCY AFTER TOTAL HIP ARTHROPLASTY

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INTRODUCTION: Proximal femoral shape can be objectively quantified with the canal-flare index. Our aim was to analyze its effect on leg-length discrepancy (LLD) after total hip arthroplasty in addition to the femoral neck resection level and different types of endoprosthesis. **PATIENTS AND METHODS:** The study included a series of 70 consecutive patients with unilateral primary total hip arthroplasty (21 Implantcast-EcoFit, 29 EndoPlus-Zweymüller, 20 Link-SPII) who were operated by a single experienced surgeon through posterior approach. Age at operation, gender, radiographic measurements of canal-flare index, femoral neck resection level, pre/postoperative LLD, center of rotation shift and femoral offset were obtained from pelvic radiographs. Differences between three types of hip endoprosthesis were evaluated with one-way ANOVA and multiple logistic regression. **RESULTS:** Patients with cemented SPII had significantly smaller canal-flare index (2,9) and older age (76.6 years) when compared to uncemented EcoFit (3,2) or Zweymüller (3,2) group with mean age 58.9-60.2 years ($p = 0.05$). Medial shift of the center of rotation was considerably smaller in cemented implants. Mean femoral neck resection level and postoperative LLD were equal in all three implant groups. In multiple logistic regression model the independent risk factors for postoperative LLD >5 mm included male gender, younger age and resection level but NOT canal-flare-index, preoperative LLD or implant type. **CONCLUSIONS:** Differences in the proximal femoral shape are not an independent risk factor for increased postoperative LLD. However, canal-flare-index changes with age and might be a relevant factor in choosing the implant type for optimal femoral fixation.

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Session: Hip: Short Oral Presentations Hip II

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Room: MARACANÃ

Abstract no.: 37556

PROXIMAL FEMORAL ANATOMY AND COLLARED FEMORAL COMPONENTS: IS A SINGLE SIZE OF COLLAR ADEQUATE?

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The value of collared stems for uncemented implants remains controversial. Some comparative studies have been published but to date, the adequate size of the collar with regards to the proximal femur's anatomy has never been studied. The goal of this study was to assess whether the size of the collar needs to be adjusted to the size of the femoral component used, and to the use of standard or lateralized component. 102 CT of normal femurs were analysed by 2 independent surgeons. Each CT view passed through the axis of the proximal diaphysis and the center of the femoral head. Templates of femoral components were set to reproduce the center of rotation and an optimal filling of the femur. To determine the ideal size of the collar, the distance between the medial edge of the prosthesis and the medial edge of the femur (so-called P-C distance) at the level of the neck cut was measured. The inter-observer concordance for the P-C distance measurement was satisfactory (kappa 0.7). 56% of the selected implants were standard. The mean size was 5 (1 to 10). The mean P-C distance was 9.9mm (5 to 16mm). It was 8.8mm for standard implants and 11.3mm for lateralized implants, with significant difference ($p < 0.0001$). The size of the selected implant was significantly related to the P-C distance ($r = 0.27$; $p < 0.005$). These results suggest that the size of the collar should increase with larger sizes, and that the use of a longer collar with lateralized implants should be advocated.

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Abstract no.: 36906

DOUBLE-LEVEL PELVIC OSTEOTOMY FOR MANAGING SEVERE ACETABULAR DYSPLASIA

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The Pemberton's osteotomy has been recognized as a standard technique for the treatment of acetabular dysplasia. Pemberton's osteotomy is characterized by a redirection of the acetabular roof, hinging on the triradiate cartilage after an incomplete iliac osteotomy. The shape of the acetabuloplasty is modified by rotating the acetabular fragment caudally and anteriorly to improve the anterior and lateral coverage of the femoral head. The aim is to report and describe a new surgical technique of a Double-level Pelvic Osteotomy performed in a 7-year-old girl with severe pan-acetabular dysplasia where a single classic Pemberton's was not sufficient to provide an adequate coverage. The rationale for this double-level Pelvic Osteotomy is that the superior level Pemberton's could provide the necessary lateral coverage and some of the required anterior coverage, while the inferior level Pemberton could provide adequate anterior coverage by directing the correction more anteriorly. To the best of our knowledge, this technique has never been reported. The osteotomy described in this paper achieved sufficient acetabular coverage in the case of severe acetabular dysplasia. The described osteotomy might be the solution to combined severe anterior and lateral acetabular dysplasia.

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Abstract no.: 37284

DOES FULLY AUTOMATIC MRI SEGMENTATION RELIABLY ASSESS THE THICKNESS OF ARTICULAR CARTILAGE IN THE HIP JOINT?

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Introduction: Automatic assessment of articular cartilage properties on MRI of the hip joint allows a standardized evaluation with high reproducibility and could revolutionize hip diagnostics. Our study group developed a fully automatic algorithm for the assessment of cartilage thickness in the hip joint. The aim of the study was to compare the cartilage thickness measurements of the automatic segmentation algorithm and human readers. Methods: The study was designed as an experimental study based on retrospective evaluation of hip MR images. Data from 20 patients (mean age 31.0 years, SD 10.6, 9/11 male/female) with femoroacetabular impingement were included. All patients were imaged on a 3.0 Tesla MRI unit using a dedicated surface MRI coil. Data from a 3D-isotropic True-FISP MR-sequence was used for the manual segmentation of articular hip cartilage in the ITK-SNAP software. Based on the manual segmentation data a fully automatic algorithm was developed. We used a statistical model of the cartilage shape in conjunction with the prediction of voxel class-membership probabilities for segmentation. The mean cartilage thickness in the central weight bearing area superolaterally was measured for the manual segmentation and for the automatic segmentation. Results: The mean cartilage thickness was 2.72 mm in the manual and 3.00 mm in the automatic segmentation with no significant difference ($p=0.17$). Conclusion: Our results suggest a high reliability of automatic MRI analysis of the hip articular cartilage. This represents first step in delivering diagnostic parameters for the hip joint fully automatically and can greatly advance the diagnostic possibilities in the future.

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Abstract no.: 36998

**ROLE OF LATERAL CIRCUMFLEX FEMORAL ARTERY (LCFA) AND
INTRA OSSEOUS VASCULAR ANASTOMOSIS IN FEMORAL HEAD
BLOOD SUPPLY**

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Introduction: The aim of this study is to investigate the significance of LCFA and intraosseous vasculature in blood supply to femoral head. **Material and methods:** To study the role of metaphyseal blood supply, a posterolateral approach was performed in 8 cadaveric hips and middle of the femoral neck was injected with Higgins India ink by drilling through the inferolateral aspect of greater trochanter. For LCFA, the femoral triangle was dissected in 5 cadaveric hips to isolate the LCFA, which was then injected with Higgins India ink. The heads were then harvested, sliced and divided into 15 zones (12 head zones and 3 neck zones). The distribution of dye was then studied using the Spalteholz technique. **Results:** Specimens from the 8 hips with intraosseous neck injection showed consistent dye in the blood vessels of neck region without much dye in the femoral head quadrants. In the 5 hips with LCFA injection, small caliber vessels containing dye were seen in 3/4th of inferolateral femoral head zones and around 50% of neck zones. The rest of the head zones had minimal dye. **Conclusion:** Current study suggests absence of any significant epiphyseo-metaphyseal vascular anastomosis in the femoral head. Although the LCFA contributes to the persistence of small caliber blood vessels in some zones of femoral head, these do not seem to be large enough to provide sufficient perfusion to the femoral head, as in cases of surgical insult of medial circumflex femoral artery following hip resurfacing using posterolateral approach.

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Abstract no.: 36460

CONTRALATERAL HIP FRACTURE - EPIDEMIOLOGICAL MONOCENTRIC STUDY OF 5,102 FRACTURES - INCIDENCE AND RISK FACTORS

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Introduction: There is an annual increase in the incidence of hip fractures of 6% in Prague, Czech Republic. The goal of the study was to evaluate a group of patients from the Register of hip fractures tracked in 1997-2011 with contralateral hip fractures and to determine the incidence and risk factors. Methods: 5,102 hip fractures with the mean age of 81.2 years (M/F ratio 28/72%) were evaluated with 218 contralateral fractures (4.5%). 105 patients that sustained a second hip fracture (2.1%) within 18 months after the first one were analyzed. Regression analysis in multivariate models was used for statistical evaluation. Results: Patients who sustained a second fracture were 3-years older compared to the group with one fracture. Several risk factors were indicated for the second hip fractures: female gender (2x), patients living in nursing home facilities (5x), limited mobility before the injury (5x) and a trochanteric fracture (1.5x). There was a significant risk of sustaining the same type of the fracture on the contralateral side (76%). Patients with second hip fractures have had a lower rate of 1-year mortality compared to patients with a single fracture. Age, side of fracture, ASA-score and type of treatment didn't have any statistical effect. Patients belonging to a higher risk group of a second hip fracture should receive special prophylactic care.

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Abstract no.: 38460

ULZIBAT MYOFASCIOTOMY - A NEW METHOD TO TREAT MUSCLE SHORTENING IN CP CHILDREN

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Nowadays new surgical methods come to get know via internet. Because of being asked about Ulzibat method by patients we visited the Russian doctor practicing in Barcelona, learned his examination and surgical technics and until now have been practicing this method at several children with very good outcome. Herewith we want to present our own experience including failures and complications. The muscle lengthening in this technic is done with a very tiny scalpel percutaneous. The effected muscles have to be carefully examined by very accurate palpation. During general anaesthesia up to 25 muscles are myofasciotomised at legs, arms, stomach, back and in the face. Our own experience indicates that surgery needs less time, there is less post-surgical pain, recovery is shorter and the method gets very high acceptance by patients and parents. Necessary muscle lengthening in combination with hip reconstruction could be achieved more gently.

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EVALUATION OF TREATMENT OF DISTAL TIBIA AND FIBULA FRACTURES IN CHILDREN BY OPEN FIBULAR PLATING AND PERCUTANEOUS WIRES OF THE TIBIA

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Metaphyseal and physeal injuries of the distal tibia and fibula are among the most common acute injuries of the lower extremity in children that require accurate diagnosis and treatment for optimal outcome. Boys are more frequent than girls in these injuries and both direct and indirect mechanisms are present. In the period between January 2011 to January 2013, 30 cases of distal tibial and fibular fractures in children in whom the fracture of the fibula is high above the level of the epiphyseal plate to allow fixation by a plate, underwent open fibular reduction and fixation by one third tubular plate and screws and closed reduction of the tibia and fixation by percutaneous wires. The age ranged between 7 and 12 years. There were 19 boys and 11 girls, no cases of open fractures included. All cases were evaluated clinically and radiologically before surgery, a splint was applied after surgery for 4 weeks in all cases. The follow up period ranged between 12 to 36 months. All patients were evaluated clinically and radiologically for reduction, fracture healing, range of motion and function. All cases united in a period ranged from 10 to 14 weeks and could return to the pre-injury level of function during the follow up period.

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NOVEL TECHNIQUE FOR THE SINGLE STAGE MANAGEMENT OF CONGENITAL VERTICAL TALUS BY PERCUTANEOUS TENOTOMIES, OPEN TALONAVICULAR REDUCTION AND PERCUTANEOUS K-WIRE FIXATION

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Introduction: Management of congenital vertical talus (CVT) may depend upon the age of initial presentation. Early management may involve a trial at single stage correction, a two-stage correction, or the addition of subtalar arthrodesis. These procedures are usually associated with high complication rates. Material and Methods: A prospective cohort of 20 feet (11 patients) with CVT all under 30 months of age of both the idiopathic and teratologic variety is presented. The condition was treated by a novel technique utilizing percutaneous tenotomies of the tibialis anterior, extensor digitorum, extensor hallucis longus, peroneal longus and brevis tendons, along with the Achilles tendon. This was combined with a minimal medial mid-foot incision to allow for reduction and K-wire fixation of the calcaneocuboid and talonavicular joints, followed by plication of the spring ligament. Patients were then casted in a below knee cast for 8 weeks. Following which, a below knee orthotic with medial arch support was applied for a one year. Results: Minimum follow up period was for twenty months. Results were evaluated using the 10-point system developed by Adelaar et al. Initial correction was achieved in all cases with significant improvement of radiological parameters ($p < 0.05$). There were 2 cases of relapse (in a bilateral patient diagnosed with Escobar syndrome) Conclusions: The described technique appears to give initial promising results. The recurrence rate is statistically related to later age of management and to teratologic varieties. However, this rate still appears to be lower than the reported complication rates associated with the more extensive open surgical releases.

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MEDIAL OPENING WEDGE OSTEOTOMY IN TREATMENT OF BLOUNT'S DISEASE

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Introduction: Blount's disease is an acknowledged cause of various deformity of the leg in childhood. Our study aims to evaluate the results of Medial wedge osteotomy as a treatment modality for Blount's disease. Methods: Twenty cases of Blount's disease were enrolled in this prospective case series study. The 20 cases consisted of 12 girls and 8 boys. All cases were diagnosed via clinical assessment and radiological criteria. The procedure involved an open wedge osteotomy at the upper medial aspect of the tibia which was subsequently filled by bone allograft and casted. K-wire fixation was required depending on the degree of stability of the osteotomy site. The cast was removed at 6 weeks then full weight-bearing is allowed. A follow-up period of 3 years including clinical assessment of limb alignment and radiological evaluation of upper tibial growth using whole limb x-rays. Results: From the 20 enrolled cases; 18 cases were corrected on long term follow-up both clinically and radiologically with restoration of the normal mechanical axis of the lower limb as well as the metaphyseal-diaphyseal angle. 2 cases had recurrence of the condition after graft resorption. One case was complicated by a superficial infection which ultimately resolved uneventfully. Conclusion: The medial opening wedge osteotomy proved to be successful in treatment of Blount's disease with a recurrence rate of 10% without limb length discrepancy. Its advantages include being easy technique to be performed, rapid bone healing and early weight bearing.

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EXTENT OF PHYSEAL INVOLVEMENT IN LEGG-CALVES-PERTHES DISEASE

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Background and purpose: The extent of growth plate involvement in Legg-Calvé-Perthes disease (LCPD) appears to be associated with regeneration of the affected femoral head and clinical outcomes. The growth plate involvement (GPI) index is reportedly a reliable predictor of final radiographic outcome in LCPD. Methods: We retrospectively reviewed the serial radiographs of 47 skeletally mature patients with unilateral LCPD who were treated conservatively. The mean duration of follow-up was 8.9 years (range, 4-13 years). The affected hips were categorized into those with and without physeal involvement. Herring classifications were determined and the GPI indices were estimated at the stage of maximum fragmentation. The Stulberg classification, leg length discrepancy (LLD), articulothrochanteric distance (ATD) index, neck-shaft angle, neck width and height were determined at skeletal maturity. Results: The GPI indices were lower in Herring groups A and B ($p < 0.001$) and Stulberg classes I and II ($p = 0.002$), and these values were increased in the Herring group B/C and C and Stulberg classes III, IV and V. However, the age of onset, LLD and ATD index at skeletal maturity were not associated with the GPI index ($p = 0.226$ and $p = 0.065$, respectively). The neck-shaft angle of the affected hips with physeal involvement was significantly different compared to that of unaffected hips ($p < 0.001$). Interpretation: The GPI index could be used to determine the extent of physeal involvement in LCPD, and might be considered one of the prognostic value of radiographic development in patients with LCPD who treated conservatively

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Abstract no.: 37720

INTEROBSERVER VARIABILITY OF A RADIOLOGIC CLASSIFICATION OF HUMERAL SUPRACONDYLEAR FRACTURES IN A PEDIATRIC POPULATION

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Introduction: Humeral supracondylar in-extension fractures add up to two-thirds of the surgeries in Paediatric Orthopaedic departments related to injuries to the elbow. Gartland classification, modified by Wilkins, is the most used to guide the management of these patients, its interobserver variability is similar to others, as Lauge-Hansen classification for ankle fracture. Objectives: To establish the interobserver variability of the in-extension supracondylar fractures of the humerus in paediatric population and to compare the results between 'types' and 'subtypes' and the different groups of physicians under evaluation. Material: Observational, descriptive, prospective study of a case series of supracondylar humeral fractures 'in-extension'. A group of three experts analyzed fifteen radiographs and classified them according to Gartland classification, modified by Wilkins. Then these images were sent to physicians from three groups: Orthopaedic surgeons, paediatric orthopaedic surgeons and residents from different programmes and years of training, with a total of 480 answers. The statistical analysis was made with Kappa value. Results: There is a larger agreement in classifying the images according to the basic types rather than subtypes. We found a smaller amount of agreement in the groups of residents compared to the orthopaedic surgeons or the paediatric orthopaedic surgeons, and a larger agreement according to the more expertise the analyzed group had. Conclusions: The original Gartland classification shows an adequate variability, with a larger disagreement when the modification made by Wilkins was applied.

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LEVERAGE APPLICATION ON SUPRACONDYLAR HUMERUS FRACTURES IN CHILDREN

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Supracondylar humerus fracture is one of the most common injuries in children accounting for 7 to 9 percent of all childhood fractures. In displaced fractures the treatment of choice is closed reduction and percutaneous pinning. But for Garland type IV or flexion-type injuries, it is hard to treat by classic closed reduction. We try to introduce leverage assay to assist reduction in extremely unstable extension-type or flexion-type injuries, and analysis the advantage and disadvantage of this method.

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Abstract no.: 37467

IS IT NECESSARY TO PERFORM SURGERIES IN A CHILD WITH CONGENITAL PSEUDARTHROSIS OF THE TIBIA?

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Congenital pseud arthrosis of the tibia (CPT) is a seldom deformity to gain bone healing, which is characterized by recurrent pathological fractures of the tibia or fibula during early childhood. In this series, totally 27 patients (mean age 4.68 years, range from 1.75 to 14 years; 17 boys vs. 11 girls) suffered from CPT were performed several surgeries (average 1.89 times per person, range from 1 to 4 times) in our institution. Resection of the lesion, bone grafting with autologous iliac strips or fibula fragment for the tibial pseud arthrosis site while allograft segment for the ipsilateral fibula defect, and kinds of fixation techniques, such as unlocking or locking intramedullary rod alone, Ilizarov external fixation frame alone, or combination of external and internal fixations, constituted our surgical strategy. Up to the final follow-up, only 9 patients achieved bone healing. The left 18 patients, who kept pursuing their next management options, had poor results. Meanwhile, complications also occurred in this present series, including breakage of the rod, or nail; infection of the operation field, or pin tract, and pain at the iliac donor site. Considering the difficulty in treatment, we thought it is important to illustrate to the patients and their family the extremely high rate of non-union, even after several surgeries. Amputation might be a reasonable choice for some children with CPT.

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CAN WE DIAGNOSE DEVELOPMENTAL DYSPLASIA OF THE HIP IN NEWBORN INFANTS BY MEASURING THE PUBO-FEMORAL DISTANCE? COMPARISON WITH THE GRAF METHOD

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Purposes: to evaluate if the ultrasonographic pubo-femoral distance (PFD) is an accurate, feasible and reproducible screening measurement for diagnosis of developmental dysplasia of the hip (DDH) in new-born infants, compared to Graf method. Materials and methods: Local ethics committee approved the study design. Written informed consent was waived. Between January/2010 and March/2012, 116 neonates at risk for DDH were retrospectively included. Hips were distributed in two groups according to the recommendation for treatment: non-dysplastic (ND; Graf I and IIA; 211 hips; 69females/37males) and dysplastic hip group (DH) (Graf IIB, Graf IIC, III, D, and IV; 21 hips; 8females/3males). Ultrasonography (US) was performed in the fourth week by one resident and one experienced radiologist. Statistical analyses for covariates with and without normal distribution were performed using Student-t or Mann-Whitney test, respectively. Accuracy of PFD to diagnose DDH was calculated. For assessment of interobserver agreement, intraclass correlation coefficient (ICC) was calculated. Results: Mean PFD of ND group on neutral position was 3.09mm and with the hip flexed, 3.64mm. Mean PFD of DH group was 6.29mm and 7.59mm, respectively. Sensitivity, specificity, and accuracy of PFD were 94.4%, 93.4%, and 97.2% (cut-off 4.6mm) on neutral position and 94.4%, 89.0%, and 95.5% (cut-off 4.9mm), with flexion of the hip. ICC was 0.852 and 0.864, respectively. Conclusion: PFD can be used as a screening tool for diagnosis of DDH with high accuracy, even by inexperienced radiologists. PFD is comparable to Graf method enabling differentiation of patients who should undergo treatment

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LONGITUDINAL POSTNATAL GROWTH OF THE FIRST METATARSAL

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Longitudinal growth of the first metatarsal has not been previously studied. The aim of the study is to determine the postnatal longitudinal growth pattern of this bone and compare it with the foot and lower limb long bones. Methods: Through a computerized image search, we identified patients under 18 years-old with radiographs reported as "normal" by the radiologist. A sample of 886 patients were divided into 18 groups according to their age (0-11 months, 1 year, 2 years, etc.), and sex (female and male). Analysis was performed using Kodak Carestream imaging software PACS. Length was measured in millimetres. Intra and inter-rater agreement was calculated with intraclass correlation coefficients for agreement ICC2 (A,1). Values were grouped for each age and growth rate was calculated. Values are reported as means, standard deviation and 95% confidence intervals. A two-tailed p value of < 0.05 was considered significant. Results: The average length in the first group was 19.91mm (3.20, 15.22 – 25.62). The average length in the last group was 66.13mm (5.33, 52.50 - 77.18). Annual growth rate was 2.71mm. The average age at the time of physeal closure was 14.85 years (\pm 1.64) for boys and 14.77 years (\pm 3.63) for girls. Longitudinal growth of the first metatarsal mimics the growth of foot but not the long bones of the lower limb. Growth curves described in this article can be applied to conditions that affect foot development or require corrective surgery on the first metatarsal, as well as standard reference in future studies.

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DEGA OSTEOTOMY FOR THE TREATMENT OF CONGENITAL DYSPLASIA OF THE HIP

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Background: The Dega osteotomy is a versatile procedure that is widely used to treat neuromuscular hip dysplasia. There is a paucity of the English language literature on its use in acetabular dysplasia seen in developmental dysplasia of the hip (DDH). In 1969 Dega described a transiliac osteotomy to treat residual acetabular dysplasia secondary to congenital hip dysplasia or dislocation. Methods: The study included 21 patients (22 hips), they had been treated by open reduction, Dega osteotomy with or without femoral (shortening, derotation and various) osteotomy. The age at the time of the operation ranged from 18 to 50 months. Results: The patients were followed both clinically and radiologically for mean duration of 16.9 months (range, 6–36 months). The overall final clinical results were excellent in 11 patients (50%), good in 8 (36%), fair in 2 (9%) and poor in one patient (5%), satisfactory (excellent and good) in 19 patients (86%) and unsatisfactory (fair and poor) in three patients (14%). The radiological end result was Class I (excellent) in 8 patients (36%), Class II (good) in 10 (46%), Class III (fair) in two (9%) and Class IV (poor) in two patients (9%). The results were satisfactory in 18 (82%) patients and unsatisfactory in four (18%) patients. Conclusion: We concluded that operative treatment of neglected DDH after the walking age with Dega osteotomy gives satisfactory results. Keywords: Developmental dysplasia of the hip, Dega, Pelvic osteotomy

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EFFICACY OF HEMIEPIPHYSIODESIS FOR ANGULAR DEFORMITY CORRECTION AROUND KNEE USING EIGHT PLATE

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Introduction: Hemiepiphyodesis for angular deformity correction around knee in skeletally immature patient is done using staples, transphyseal screws and eight plate. Use of eight plate have shown promising results with lesser complication rates in terms of physeal growth arrest and implant related complications. In present study we aim to show the efficacy of eight plate as a modality for hemiepiphyodesis with lesser complication rate and faster rate of correction of deformity. Methods: Twenty five patients (unilateral: 20, bilateral: 5) with angular deformity around knee were treated with eight plate. Patients were assessed at 3 month, 6 month, 9 month and 1 year intervals. Deformity correction was assessed clinically with calculation of intermalleolar/intercondylar distance and radiological assessment was done by calculating correction of mechanical/anatomical axis. Results: The average age of intervention was 8 years. Rate of correction of IMD/ICD was 1.1 cm per month. Rate of correction of mechanical axis was 0.7 o per month. Rate of correction of anatomical axis was 1.1 o per month. The average duration of eight plate removal 12.4 months .There was only one complication of screw back out. Conclusion: Reversible hemiepiphyodesis using eight plate is and effective method with minimal complications and faster rates of correction. Physeal growth arrest is not seen with eight plate application. Also there are less implant related complications.

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Abstract no.: 36800

PATELLAR TENDON PPLICATION IS THE MAINSTAY IN THE MANAGEMENT OF SEVERE CROUCH GAIT IN CHILDREN WITH CEREBRAL PALSY

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Background: Patella alta has been implicated in the etiology of crouch gait in individuals with cerebral palsy. Crouch gait can cause knee pain, decreased efficiency in ambulation and increased energy expenditure. Recently, surgical intervention to the patellar tendon has been used to decrease patella alta and reduce crouch gait. Crouch gait in cerebral palsy is associated with contracture of hamstrings and weakness of quadriceps. Different treatment options have been described; we followed the treatment protocol aimed at correction of the flexion deformity of the knee, weakening of the hamstrings, and patellar tendon plication, which we used on 31 children with severe crouch. Methods: This surgery, performed in single stage with, plication of the patellar tendon and fractional lengthening of the other hamstrings. The degree of fixed deformity, the popliteal angle, quadriceps power, range of knee motion, ambulatory status and the efficiency of gait, and the position of the patella in X-ray were evaluated before and after surgery with a minimum 18 months follow-up. Results: The gait and the power of the quadriceps improved. The range of knee motion increased. The flexion deformity and popliteal angle decreased significantly. Patella alta was corrected in all cases. The Functional Mobility Scores and the ambulatory capacity increased in all the children. Conclusion: Patella alta is a common radiographic finding in ambulatory individuals with cerebral palsy. The method of treatment of severe crouch gait outlined in this study is effective and safe method to deal this difficult problem.

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Abstract no.: 36617

NONSURGICAL BALANCE THERAPY OF INFANTILE AND JUVENILE IDIOPATHIC SCOLIOSIS (IS)

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Introduction: due to our investigations nature of IS was disclosed. It has regular nature, biomechanical and reflex origin, based upon asymmetrical neurological activity of brain`s hemispheres. One sided contracture of spine extensors leads to violation of correct balance between spine and pelvis, its tilt to side of weak muscles and development of lateral spinal curves. Such wrong body`s position is then fixed in cerebellum as reflex for following life. Patients and methods: from 1996 till 2014 about 250 children with infantile and juvenile IS were under our control and treatment. Clinical materials were analyzed using data of radiological and neurophysiologic investigations. Results: our method of balance therapy is based upon restoration of horizontal pelvis position, resulting with abolishing single side spasm of spine`s extensors and consequently restoration of correct spine`s axis. Proposed method includes: usage of special health child seat of our construction in children from 1 to 3 years of age; raising of tilted pelvis in children from 3 to 10 years using correcting shoe inlaid from side of leg`s shortening; distortional, flexing and stretching exercises for baby`s body, aimed relaxing of spine`s muscles. Such treatment results in creation of new "correct" reflex of vertical position of body, which is preserved in further life. Additional treating factor is magneto-acoustic therapy with its anti-swelling, anti-inflammatory and analgesic effects. Conclusions: balance therapy of infantile and juvenile scoliosis is effective nonsurgical method of treatment based upon creation of "correct" reflex of vertical body position, preserved in following life.

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PERTHES' LIKE FINDINGS IN CEREBRAL PALSY PATIENTS

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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 with a mean of 48 month. 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.

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CLINIC- RAY DIAGNOSIS OF AVASCULAR NECROSIS IN CHILDREN'S FEMORAL HEAD BONE

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The aim and the task of the research: are to study the clinical manifestation, to develop early diagnosis, to determine mineral density bone in Perthes' disease in children by using modern techniques. The material and the methods of the research: x-ray, dopplerographic, x-ray densitometric and MSCT. We examined 124 children at the age of 3-16 years, being received on treatment to the paediatric orthopaedics clinic of the Scientific Research Institute (SRI) of traumatology and orthopaedics. Results and discussions. Comparison of clinical, radiological, Doppler graphic, MSCT studies have shown that children under I and II stages of the disease (7 children) observed minor changes in the structure of the femoral head bone on the radiograph. On MSCT studies revealed more clearly the changes in the subchondral region of the head. On Doppler examination we observed a decrease of blood flow in the circumflex artery of the femoral head. The mineral bone density did not deviate from the norm at children from 3 to 7 years. Reduce of mineral density of children was identified by following way: 3-7 years – 25%, 8-12 years – 18.75%, 13-17 years – 26.25%. Conclusions: - For early diagnosis of avascular necrosis of the femoral head bone is advisable to use x-ray, and MSCT and radiographic researches. - At children with avascular necrosis of the femoral head bone was revealed a reduction in mineral density bone of the lower extremity on the affected side- in 35.3% of cases.