



CEOC^{11th}

JUNE 9-10, 2016

KAISERSTEIN PALACE
CZECH REPUBLIC

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BOOK OF ABSTRACTS

CEOC 2016 SECRETARIAT

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**PLENNARY SESSION 1
NEW TRENDS IN HIP AND KNEE ARTHROPLASTY I**

OUR EXPERIENCE WITH THE MIS-AL SURGICAL ACCESS IN TOTAL HIP REPLACEMENT

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We utilize the minimally invasive – anterolateral surgery (MIS-AL) of the hip joint according to Röttinger in total hip replacement at our orthopedic department since September 2005. We have used this surgical access in 525 primary total hip replacements. In our presentation we summarize our experience with the MIS-AL surgical technique and evaluate the post-operative course and the results of the rehabilitation care in a group of these patients.

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MODIFIED LATERAL APPROACH IN DYSPLASTIC HIP ARTHROPLASTY

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PURPOSE: We present a modification of the direct lateral approach to the hip that provides excellent exposure to both, femur and acetabulum. Such approach allows adequate shortening of the proximal femur and further leg length equalization in dysplastic hip without necessity for trochanteric osteotomies, transverse cuts or detachment of abductor muscles.

METHODS: Two groups of patients with dysplastic hips were compared: a) test group - Crowe 3 and 4 patients, which underwent THA using modified lateral approach; and b) control group - Crowe 1 and 2 patients which underwent THA using direct lateral approach. ROM, strength and balance board testing together with general functional assessment scores were examined before surgery and 6 months after surgery.

RESULTS: ROM, strength and balance board testing were significantly improved postoperatively in both, test and control groups. There was no significant difference between the groups, except in some specific (combined) motions: reduced flexion and internal rotation in test group; and reduced extension, abduction, and external rotation in control group.

General functional assessment scores demonstrated significant improvement after surgery in both groups, while there was no significant difference between the groups.

CONCLUSION: We may conclude that the use of modified lateral approach in patients with Crowe 3 and 4 dysplastic hips allows equal functional result compared to Crowe 1 and 2 patients that underwent same procedure with use of standard approach. Therefore, we recommend the use of modified lateral approach in patients with severe hip dysplasia undergoing THA.

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TRABECULAR METAL CUPS FOR REVISION HIP ARTHROPLASTY

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4 Introduction: Acetabular cup reconstruction in type 3A and 3B acetabular defects can be challenging. The use of trabecular metal could be useful. The objective was to analyze the results of trabecular titanium cups in patients where revision of the cup is performed due to instability and acetabular defect.

Materials: We prospectively analyzed patients operated between 2012 and 2014. All patients with 3A and 3B defects were included in the study. In all patients extended lateral approach was used. All had same preoperative and postoperative protocol. In all patients Limacorporate S.p.a DELTA-TT cementless cup was used.

Results: 36 patients met the inclusion criteria and were enrolled in the study. In 20 patients revision of the acetabulum was performed and in 16 both revision of the stem and the acetabulum was performed. In 12 patients allograft was used. On average acetabulum size was 58 (52-64) and in all cases elevated rim poly was used. On average cup inclination was 39° (22°-50°). Average anteversion of the cup was 12° (2°-26°). The cup was medialized on average 2.6 mm (0-9.5 mm). In 11 cases additional stabilization was achieved with 2 screws and in 25 with 3 screws. Operation time was on average 112±26 min (80-160) for only cup group and 146±29 min (110-210) for cup and femur group. Total blood loss was 1158±514 ml (600-2200) for only cup group and 2356±1126 ml (1200-4800) for cup and femur group. Postoperatively there was no cup loosening.

Discussion: After radiographic and analysis of perioperative factors the authors strongly encourage the use of trabecular titanium cups for revision hip arthroplasty. Increased mechanical friction helps in obtaining primary stability (with or without allografts) in cup position of less than 40-45° and anteversion of 10-15° while providing enough bone-cup contact for bone ingrowth and final stability.

**PLENNARY SESSION 2
NEW TRENDS IN HIP AND KNEE ARTHROPLASTY II**

HOFFA PAD IN TKR: DISSECTED OR NOT?

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Background: Hoffa pad in Total knee replacement is a mystery. Very few studies have been carried out and no obvious results have been achieved.

Aim: Our aim was to compare the clinical value of the Hoffa pad including blood loss, range of motion, anterior knee pain and swelling post total knee replacement.

Method: this study has been designed as prospective randomized control trial, with involvement of 4 surgeons, with no exclusion criteria and no special preparation for the patients.

Results: By leaving the Hoffa pad well alone, there were increase of range of motion post TKR by 5 to 10 degrees, there were decrease of blood loss by 50%, no difference in swelling, and most patients with Hoffa pad had almost no anterior knee pain.

Conclusion: the study is in a very early stage to draw a concrete conclusion, however early results showed that Hoffa pad can play a huge role in lubrication, anterior knee pain and finally in reducing blood loss.

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THE USE OF MODIFIED COTYLOPLASTY IN SPECIAL CASES OF DYSPLASTIC HIP ARTHROPLASTY

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PURPOSE: Our modification of cotyloplasty technique consists of acetabular reaming up to the medial wall, subsequent controlled fracture of the medial wall and stabile acetabular component fixation with superolateral screws. Our technique does not require any grafting technique of the acetabular bottom.

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METHODS: We prospectively analyzed 21 THA in patients with hip dysplasia and insufficient bone stock at the level of the true acetabular roof. In all patients modified cotyloplasty technique was performed.

RESULTS: Patient's average age at the time of surgery was 53.4 ± 10.3 years and average follow up was 5.7 ± 2.3 years. Average acetabular size was 48, acetabular angle was $41.3^\circ \pm 8.5^\circ$, acetabular anteversion was $17.5^\circ \pm 6.0^\circ$, cup medialization was 6.6 ± 2.9 mm in average. In average $46 \pm 20\%$ of the total acetabular surface was protruding in the pelvis. In 4 cases superolateral acetabulum was not completely covered with bone (lateral cup placement was 6.5 ± 3.7 mm in average). In one case (medialization of 9.6mm) primary instability occurred and cup was replaced with another cementless cup and generous spongionoplasty of the acetabular bottom.

CONCLUSION: Cotyloplasty is used in cases of insufficient bone stock at the level of true acetabular roof. It removes necessity to use any augmentation of the acetabular roof. It seems that primary stability can be achieved with as low as 25% of contact area between the bone and acetabulum (since when even 77% of the acetabulum protrudes in the pelvis, good primary stability is achieved). Preserved medial lamina and periosteum heal and thus provide secondary (long lasting) cup stability.



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MODULAR THR SYSTEM MUTARS IN THERAPY OF PERIPROSTHETIC FRACTURES AND REVISIONS

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The aim of the paper is to introduce our experience in hip revision arthroplasty with the modular System MUTARS- in the procedure of periprosthetic fractures and in loosening of primary THR.

Material and Methods:

Between 2007-2014 we operated 82 patients with periprosthetic fractures of proximal femur, have done 42 THR revisions with the MUTARS modular system. The indication for use of this system acts according to the classification of Vancouver, in the revisions according to the bone defects of proximal femur. Clinical and radiological results have been examined according to Staffelstein Score at the end of the rehabilitation stay, about 10 weeks after surgery.

Results:

Average results acc. Staffelstein score was 75-80 points 2 months after surgery, in the revisions 95-100 points. Full weight bearing 6-10 weeks after operation. Complication in 6 patients- 2 refractures, 1 hip dislocation, 2 caudal dislocation of the stem with reoperations - head exchange, 1x infection. The treatment after the periprosthetic fractures with the modular system is longer to achieve the same results as in the revision operations.

Summary:

The use of MUTARS modular hip revision System is a very good method in the therapy of periprosthetic femur fractures and the revision with bone defects with good clinical results.

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CAN SONICATION PROVIDE NEW INFORMATION IN PRESUMED ASEPTIC REVISION ARTHROPLASTY

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INTRODUCTION:

Clear differentiation between aseptic failure and prosthetic joint infection remains one of the goals of modern orthopaedic surgery. New diagnostic methods can provide more precise evaluation of the etiology of prosthetic joint failure. With the introduction of sonication an increasing number of culture-negative prosthetic joint infection were detected.

OBJECTIVE

The aim of our study was to evaluate culture-negative prosthetic joint infections in patients who were preoperatively evaluated as aseptic failure.

METHODS

For the purpose of the study we included patients planned for revision surgery for presumed aseptic failure. Intraoperatively acquired samples of periprosthetic tissue and explanted prosthesis were microbiologically evaluated using standard microbiologic methods and sonication. If prosthetic joint infection was discovered, additional therapy was introduced.

RESULTS

Between October 2010 and June 2014 39 patients were operated (8 revision knee arthroplasty, 31 revision hip arthroplasty). 10 (25,6%) patients had positive sonication and negative periprosthetic tissue sample, 2 (5,1%) patients had positive tissue samples, but negative sonication, in 4 (10,3%) patients both tests were positive and in 23 (59%) patients all microbiologic tests were negative. The microbiologic isolates of sonicate fluid were in 9 cases coagulase-negative staphylococci, in 2 cases *P.acnes* and in 3 cases mixed flora. From periprosthetic tissue cultures 3 samples have yielded *P.acnes* and in 3 cases coagulase-negative staphylococci were isolated.

DISCUSSION

With the increasing number of patients requiring revision arthroplasty, a clear differentiation between aseptic failure and prosthetic joint infection is crucial for the optimal treatment. Sonication of explanted material is more successful in the isolation of pathogens compared to periprosthetic tissue cultures. Sonication of explanted prosthetic material is helpful in the detection of culture-negative prosthetic joint infections.

RESULTS OF REVISION SURGERIES FOR DISLOCATION FOLLOWING TOTAL HIP ARTHROPLASTY

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Introduction: Hip dislocation is one of the most frequent complication and a common reason for revision surgery in case of total hip arthroplasties. Revision surgeries for hip dislocation have been analysed in this study.

Patients and methods: 2546 primary and 262 revision THAs were performed between 1st January 2005 and 30th June 2015 in our department. Direct lateral approach was performed in all cases. Average follow-up time was 5.4 years (0.8-11) in case of primary, and 5.5 years (1.25-10.5) in case of revision surgeries. Hip dislocations have been identified retrospectively from the available patient documentation. Primary and the revision cases have been evaluated separately. Time to revision, type of revision and success of the revised cases have been evaluated.

Results: 70 hip dislocations have been found in the study period following primary surgeries (2.8%). Half of the cases (35/70) had multiple dislocations. 71% of the dislocations occurred within the first postoperative year. 20 dislocations have been found following revision THAs (7.6%). Also half of them (10/20) had multiple dislocations. 85% of the dislocations occurred within the first year. Revision for dislocation was performed in 19% of the cases (13/70) in the primary group. In the revision surgery group this ratio was 35% (7/20). Following this 20 revised cases, no further dislocation was detected in 14 cases, single dislocation was detected in 2 cases. Re-revision was performed in two cases for recurrent dislocation and Girdlestone procedure was performed in two further cases for any other reason.

Discussion: The ratio of dislocation following THA in our study corresponds to that of given in the literature. Revisions for hip dislocation gave good results in our practice. These results could be used to inform our patients more precisely about the risk of dislocation following their hip arthroplasties, as well as about possible treatment options.

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SAVING COST IN HIP REVISION SURGERY

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Cost-effectiveness is one of the most important factor in the everyday practice in our circumstances. The number of hip revision cases have been increased all over the country within the last decade with increasing additional cost as well. There is a well defined technique in orthopaedics mainly for acetabular revision for keeping the surgical cost low. Following a literary overview was given in the subject of aseptic acetabular revision; authors report their personal experience in this topic. They analyse the result of acetabular revisions with using deep frozen allograft, with or without using pelvic reinforcement ring or X-change mesh and cemented cup to keep the cost of hip revisions low. Material and methods: 202 total hip revisions have been followed. Aseptic acetabular revisions have been performed in 146 cases; deep frozen allograft was used in 122 cases. (Sloof technique: 102, acetabular reinforcement ring: 15 and X-change mesh: 5 cases.) The average age of the patients was 66 (31-91) years, and the average follow up time was 6,3 (0,5-9,5) years. D'Antonio classification, Harris hip score and x-R analysis have been performed for assessment. Results: According to the functional assessment the postoperative Harris hip score improved significantly. Complications: 2 dislocations, 2 deep infections-Girdlestone procedure, and 2 aseptic loosening with re-revisions. Conclusion: Using deep frozen allograft impacted alone in cavitory defects, deep frozen allograft and reinforcement ring or X-change mesh in combined or segmental defects with cemented cup is a safe method with excellent results. All orthopaedic departments in Hungary could be supplied by homologous deep frozen bone from the National Bone Banks for free, therefore hip revision surgery could be really cost-effective by using the technique of impaction bone grafting for acetabular revisions instead of using any cementless design to solve the problem.

**PLENARY SESSION 3
ARTHROSCOPY OF HIP, ELBOW AND ANKLE**

HIP ARTHROSCOPY - ADDRESSING TROCHANTERIC PATHOLOGY

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Greater trochanteric pain syndrome (GTPS) is defined as greater trochanter pain with mechanical characteristics. GTPS is a common pathology that affects mostly female patients. Most cases can be managed with conservative treatment but refractory cases may be candidates for operative treatment, with favorable results having been described with extracapsular endoscopic procedures.

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The aim of the present study is to evaluate whether arthroscopic treatment of abductor tendon ruptures can improve the outcomes in patients with GTPS.

All patients diagnosed with GTPS and treated arthroscopically in our institution between January 2012 and June 2014 were identified and included in the present study - 17 patients (all females). Patients were divided in two groups. Group A (6 patients) consisted of patients with partial gluteus tendon ruptures confirmed by MRI. These were treated with all endoscopic trochanteric bursectomy and tendon suture and fixation in the greater trochanter. Patients with no identifiable gluteus tendon rupture on MRI (11 patients) were assigned to group B and treated with endoscopic trochanteric bursectomy alone. All patients were evaluated with Visual Analogue Scale (VAS), and Modified Harris Hip Score (mHHS) at 3, 6 and 12 months postoperatively.

VAS improved since preoperative period to last follow-up (mean difference 6.5 points in Group A and 5.45 points in Group B) with statistically significant results within all periods evaluated ($p < 0.05$). The mHHS showed a statistically significant increase with respect to the preoperative data and final follow-up ($p < 0.05$) in both groups - mean increase 46.83 points in Group A and 38.81 points in Group B.

Although the small sample size in this study didn't allow for the direct comparison between the two groups, patients treated specifically for abductor tendon ruptures showed a tendency towards better outcomes despite worse pre-operative functional scores.

ANTERIOR ANKLE IMPINGEMENT SYNDROME ARTHROSCOPICALLY TREATED: FUNCTIONAL AND CLINICAL OUTCOMES

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Anterior ankle impingement is a common clinical condition characterized by chronic anterior ankle pain that is exacerbated on dorsiflexion. Additional symptoms include instability, limited ankle motion, and pain with squatting, sprinting, stair climbing, and hill climbing. Diagnosis is typically confirmed with plain radiographs. Nonsurgical management includes physical therapy, strengthening exercises, activity modification, bracing and anti-inflammatory medication. Anterior ankle arthroscopy is a useful, minimally invasive technique for diagnosing and treating ankle conditions. Arthroscopic treatment offers the benefit of decreased surgical morbidity, less postoperative pain, and earlier return to activities. Indications for anterior ankle arthroscopy continue to expand, including ankle instability, impingement, management of osteochondritis dissecans, synovectomy, and loose body removal. Arthroscopic treatment of anterior ankle bony impingement provides good results, with a tendency to decrease over time. The objective of this retrospective clinical study is to assess the functional and clinical outcome after arthroscopic treatment of anterior ankle impingement. A retrospective study was carried out from January 2010 until December 2014 analysing 24 cases of anterior impingement syndrome of the ankle joint arthroscopically treated with a minimum follow-up of twelve months after surgery. Patients were evaluated with the Visual Analogue Scoring (VAS) and the American Orthopaedic Foot and Ankle Society (AOFAS). The mean follow-up was 17,8 months. 67% of the population studied were women with 33% men. The mean VAS score at the final follow-up as 2.4 and the mean AOFAS score was 90.8. No major complications were observed. Almost all of the patients returned to their previous professional and sports activity. Arthroscopic treatment for anterior ankle impingement appears to provide good outcomes with respect to patient satisfaction and low complication rates. Nevertheless, the long-term presence of associated conditions such as chondral lesions, advanced age, and previous trauma are relevant as prognostic factors.

ANY ROOM FOR TENDOSCOPY IN SURGICAL TREATMENT OF POSTERIOR TIBIAL TENDON INSUFFICIENCY?

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Posterior tibial tendon insufficiency (PTTI) is nowadays considered to be the main cause of adult-acquired flatfoot deformity (AAFD). The purpose of this study is to report outcomes of tendoscopic treatment of posterior tibial tendon (PTT) in eleven patients with stage 1 or 2 PTTI and failed prior conservative treatment. All patients were female and were, on average, 51 years old (range 35-66). The surgical procedure was carried out with patients in the supine position, with the tourniquet on the thigh of the operated side. The procedure began by performing the distal portal. A 1cm skin incision is made over the PTT, halfway between the medial malleolus and the navicular following the longitudinal axis of the tendon. The tendon sheath was then penetrated by a blunt instrument. A "small" 30° 2.7mm arthroscope was then used to visualize the tendon followed by distension of the tissue surrounding the tendon with irrigation gravity-flow system. Under direct vision, the proximal portal was made using a spinal needle, 3 to 4cm above the tip of the medial malleolus after which an incision was made into the tendon sheath. The surgeon then interchangeably used both portals to perform the required procedure. Tendoscopy was carried out as a solitary procedure in 7 patients, while in 3 patients additional procedures, such as "mini-open" tubularization of PTT or anterior ankle arthroscopy, were necessary. In a single patient transfer of flexor digitorum longus tendon was performed as a second stage surgery due to complete rupture of TP. Related with tendoscopic procedure, no complications were reported. TP tendoscopy is a useful and beneficial minimally invasive procedure to treat PTT pathology at earlier stages of PTTI. It is a technically demanding procedure that requires extensive experience in arthroscopic management of small joints and excellent knowledge of regional anatomy.

ARTHROSCOPIC TREATMENT OF POSTEROLATERAL ELBOW IMPINGEMENT CAUSED BY THE POSTEROLATERAL PLICA

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14 AIM: Posterolateral plica of the elbow is a possible cause of posterolateral elbow pain, which is most often found in adolescent athletes participating in throwing sports. These patients usually have no clear record of previous injury, but undergo a repetitive movement causing overuse of the elbow and often complain about snapping or catching in the posterolateral part of the dominant elbow with a range-of-motion deficit.

METHODS: Between January 2007 and January 2015, 10 adolescent athletes, aged 17 (range, 13 to 19) years on average visited our outpatients clinic looking for a "second opinion" because of posterolateral pain and range-of-motion-deficit in the elbow with no clear previous injury. All patients were athletes participating in handball (4 patients), gymnastics (2 patients), water-polo (1 patient), ice-hockey (1 patient), tennis (1 patient) and badminton (1 patient). At the examination all of the patients had already made an MRI which suspected the plica only in 2 patients, while in the others the radiological diagnosis was misleading mostly for osteochondritis dissecans of the humeral capitellum. Arthroscopy of the elbow was performed with patients under general anaesthesia in a prone position, with an upper arm tourniquet, using the proximal anteromedial, anterolateral, direct posterior, posterolateral and direct lateral portal. During the procedure debridement of hypertrophic plica tissue, along with any localized synovitis was performed with a motorized shaver.

RESULTS: All procedures were uneventful. No complications were noted during the postoperative period. All patients had subsequent relief of symptoms until the final follow-up after an average of 43.4 (range, 12-106) months and all of them returned to their previous sport, at the same or higher level.

CONCLUSION: Arthroscopic resection of the posterolateral plica of the elbow is a useful procedure with low morbidity and excellent functional results.

PERONEAL TENDOSCOPY

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AIM: The aim of our research is to present our experience with peroneal tendoscopy based on surgical procedures performed in a three year period.

METHODS: Between January 2013 and December 2015, 37 patients (27 female and 10 male), aged 38 years on average (range, 13 to 58), with persistent posterolateral ankle pain underwent peroneal tendoscopy. Patients were diagnosed clinically to have peroneal tendons disorders and all had additional radiological assessment performed. None of the patients underwent a tendoscopic procedure on peroneal tendons prior to surgery in our department. Peroneal tendoscopy was performed before any other arthroscopic or open procedure in all patients. All procedures were performed with patients under spinal anesthesia, in lateral decubitus position, with a thigh tourniquet. A 4.5-mm 30°-degree arthroscope with a gravity irrigation system and standard arthroscopic instruments were regularly used. Postoperative management was performed depending on specific type of pathology that was treated.

RESULTS: Of the 37 patients, we have performed peroneal tendoscopy as a solitary procedure in 15, while in the remaining 22 tendoscopy was performed as an accessory procedure together with anterior and/or posterior ankle arthroscopy, subtalar arthroscopy and open surgery for excision of the os peroneum. During tendoscopy, we performed tenosynovectomy in cases with tenosynovitis, we cut off the redundant distal muscle fibers in cases with a low-lying peroneus brevis muscle belly, for peroneus brevis tendon partial tears we performed tendoscopic debridement with or without tubularization of the tendon. In a single patient 6 months after the initial treatment a second tendoscopic procedure was performed due to persistent posterolateral pain, while all other patients were symptom-free at one-year follow-up.

CONCLUSION: Peroneal tendoscopy is a useful procedure to treat miscellaneous peroneal tendon disorders. It is a technically demanding procedure that requires the skill of an experienced arthroscopist and excellent knowledge of regional anatomy.

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ARTHROSCOPIC DEBRIDEMENT AND BICEPS TENOTOMY IN MASSIVE ROTATOR CUFF TEARS IN MIDDLE-AGED PATIENTS: IS IT STILL WORTHWHILE?

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Introduction

Retrospective study of arthroscopic debridement in massive, irreparable rotator cuff tears with tenotomy of the long head of the biceps.

Objectives

We evaluated 40 patients who were treated by a single surgeon for massive, irreparable rotator cuff tears by arthroscopic debridement with tenotomy of LHB.

Methods

The mean age was 57 years (range: 51 to 72 years) and the average follow-up was 31 months (range: 24 to 48 months). All patients had significant disabling pain weakness preoperatively. Assessments were made using the Constant score. The average Constant score improved from a mean 41 points (range: 16 to 54 points) preoperatively to a mean of 69 points (range: 49 to 87 points) at the time of follow-up. The radiological study showed no significant narrowing of the subacromial space. There was no complication related to the procedure.

Results

Arthroscopic débridement with LHB tenotomy of massive, irreparable rotator cuff tears provides reliable expectation for improvement in function, decrease in pain, and improvement in shoulder scores.

Conclusions

In our series we noted no significant humeral head migration or developing rotator cuff arthropathy.

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**PLENARY SESSION 4
TUMORS METASTASIS AND BONE TUMORS****OSTEOID OSTEOMA OF THE CORACOID PROCESS IN YOUNG ATHLETE**

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Osteoid osteoma (OO) is typically localized in long bones. Despite usual predilection sites, it can also (although rarely) be situated in some atypical localizations, such as coracoid process, and may cause chronic and refractory shoulder pain.

17 We present 22-year-old male athlete, without previous trauma, who presented to our Department with chronic shoulder pain with peak intensity during the night. Pain sensation was extremely intense and responded well to nonsteroidal anti-inflammatory drugs treatment. These typical symptoms strongly suggested OO presence and all the diagnostics were directed towards the OO. Magnetic resonance and computed tomography confirmed the diagnosis of the OO of the coracoid process. Tumor ablation was indicated and radiofrequent ablation was considered as a primary option. Unfortunately, important neurovascular structures pass in close vicinity of the CP, and therefore, use of radiofrequent ablation was not an acceptable option. Open procedure was performed: tumor drilling and lesion excision. Pain relieved right after the procedure, and on six months follow-up patient was still pain free. Based on our experience, for osteoid osteoma situated on atypical localizations such as the coracoid process, radiofrequent ablation should be reconsidered, because of the neurovascular bundle proximity. If open procedure will be indicated, we recommend tumor ablation via drilling instead of CP resection. In that way, complete lesion destruction will be possible, together with preservation of important anatomical and functional structures.

UNPLANNED EXCISIONS IN SOFT TISSUE SARCOMA: INFLUENCE ON THERAPY AND PATIENTS' PROGNOSIS

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Introduction

Unplanned excisions (UE) of soft tissue sarcomas (STS) constitute a widely known therapeutic problem. Due to the heterogeneous clinical presentation of STS, inexperienced doctors may be tempted to perform surgery prior to biopsy.

The aim of this study was to (1) identify parameters associated with an increased risk of an UE being performed and (2) assess the influence of UE on further therapy and patients' survival.

Patients and Methods

427 patients treated between 1998 and 2015 at our department were included into this retrospective study. 215 patients were male (50.4%) and 212 female (49.6%). Demographic-, tumour- and treatment-related factors were compared between UE-patients and directly referred ones.

Results

165 patients had undergone UE prior to referral (38.6%). All 392 patients underwent definite surgery at our department, including 35 amputations. Patients with UE had significantly more often superficially located ($p < 0.005$) and small tumours ($p < 0.005$). During definite surgery, UE-patients required significantly more often plastic reconstruction ($p < 0.005$).

Although a trend towards a better prognosis for UE patients was visible, the difference was neither significant in univariate ($p = 0.120$) nor multivariate analysis ($p = 0.147$). For directly referred patients only, independent negative prognostic factors were high tumour grade ($p < 0.005$) and age over 60 ($p = 0.009$). A duration of symptoms less than 6 months ($p = 0.020$), high tumour grade ($p = 0.007$) and development of local recurrence ($p = 0.002$) were associated with a poor prognosis for patients with UE.

Conclusion

Although prognosis is not impaired following UE of STS, extensive surgery with plastic reconstruction is more often required. Besides high tumour grade and a short history of symptoms, development of local recurrence is a particularly poor prognostic factor for STS-patients with prior UE.

**PLENARY SESSION 5
OSTEOPOROSIS FROM ORTHOPAEDIC POINT OF VIEW AND
OSTEOARTHRITIS NON PROSTHETIC TREATMENT (STEM CELLS,
PCR, CULTIVATED CHONDROBLASTS)**

**STROMAL VASCULAR FRACTION CELLS FOR DEGENERATIVE ARTHRITIS
TREATMENT: CASE-CONTROL STUDY OF 1128 PATIENTS**

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Therapy of osteoarthritis relies on non-steroid analgesics, chondroprotectives and in late stages total joint replacement is considered a standard of care. We performed a pilot study using novel stem cell therapy approach that was performed during one surgical procedure. It relies on abdominal lipoaspiration and processing of connective tissue to stromal vascular fraction (SVF) cells that typically contain relatively large amounts of mesenchymal stromal and stem cells. SVF cells are injected immediately to the target joint or to the connective tissue of the target joint. Since 2011, total of 1128 patients have been recruited and followed for up to 42 months to demonstrate the therapeutical potential of freshly isolated SVF cells. At the same time, one to four joints (knees and hips) were injected with SVF cells per patient. A total number of 1856 joints were treated. Clinical scale evaluation including pain, non-steroid analgesic usage, limping, extent of joint movement and stiffness was used as measurement of the clinical effect. All patients were diagnosed with stage II-IV osteoarthritis using clinical examination and X-ray, in some cases MRI was also performed to monitor the changes before and after stem cell therapy. After 12 months from SVF therapy, at least 50% clinical improvement was recognized in 91%, and at least 75% clinical improvement in 63% of patients, respectively. Within 1-2 weeks from SVF therapy 72% of patients were off the non-steroid analgesics and most of them remain such for at least 12 months. No serious side effects, infection or cancer was associated with SVF cell therapy. In conclusion, here we report a novel and promising therapeutical approach that is safe, cost effective, and relying only on autologous cells.

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AUTOLOGUS CHONDROCYTES – OUR IMPLANTATION TECHNIQUE AND ITS LIMITS, OTHER TREATMENT METHODS OF CHONDRAL DEFECTS AND SPECIAL INDICATIONS

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Our own group of patients with large cartilage defects on talus and knee treated by method of autologus cultivated chondrocytes, usually combined with spongioplasty and treatment of other lesions on the involved joint and comparison with methods of artificial cartilage (Trufit, CaReS-S1, Chndrotissue). The group of autologus chondrocytes consists of 71 cases with implantation on talus and knee. We show the whole process of harvesting, cultivating and implantation of chondrocytes and also the management of aftercare of the patient. We bring you our opinion of indications and their limits and also some scoring systems. We show you our few complications and their treatment. We give you a comparison with artificial cartilage implantation. Benefits and disadvantages of artificial cartilage and also give you a case report of special indication of artificial cartilage implantation in dislocated hip with osteochondral lesion of the head.

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3-D SOLID COMPOSITE OF BONE SUPPLEMENT BASED ON NANOFIBRES SCAFFOLD WITH STEM-CELLS DERIVED OSTEOCYTES ON ANORGANIC MATRIX

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The aim was to construct a composite structure for bone tissue substitute on the basis of degradable composite of organic nanofiber carrier and inorganic matrix in 3D and subsequent colonisation towards osteocytes differentiated hMSC.

Bone healing and substitution of bone tissue defect is still being explored. Commonly used methods as bone cement or metal substitutes even the use of autologous or allogeneic bone grafts are for many reasons considered obsolete. Inorganic substitutes on the basis of hydroxyapatite are recently used. They are intergrown by recipients' own bone cells and bone remodelling slowly occurs.

Our approach developed active bone tissue substitute using nanofiber technology for the PCL scaffold with the addition of hydroxyapatite and the colonisation of both components with hMSC with the ability of differentiation towards osteocytes. Constructed composition includes all necessary components for bone healing (inorganic and cellular) and it also forms spatially-oriented 3D structure. We used Polycaprolactone Mw 70,000 with electrostatic spinning for nanofibers formation using a modified Nanospider™ method.

As the inorganic component we used *ortho*-phosphate-calcium silicate with a crystal size of 1-2 μm which the nanofiber membrane was coated with. Both components were connected together with a tissue adhesive on the basis of fibrin glue.

Cultivated hMSC cells at a concentration of 1.2×10^4 /cm² were multiplied *in vitro* and then cultivated in the expansion medium. hMSC have overgrown both PCL membrane and the Si-CaP crystals. The prepared composite 3D structure is able after colonisation with cultivated cells serve as a three-dimensional bone tissue replacement.

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LONG TERM RESULTS WITH THE BRISTOW-LATARJET PROCEDURE

Pinheiro-Torres, Tiago; Frias, Miguel; Oliveira, Márcio; Costa, André; Pereira, Ricardo;
Lourenço, Pedro

CHVNG/E - PORTO - PORTUGAL

22 Various methods of bony stabilization, including the Bristow-Latarjet procedure, are considered gold-standard treatment for recurrent anterior shoulder instability. Thirty shoulders with recurrent anterior dislocation were treated with the Bristow-Latarjet procedure and had a two to fifteen-year follow-up after surgery. There were two cases of significant recurrences (6 per cent). During follow-up, further surgery had been performed on one of these. Another three patients (10 per cent) had experienced occasional insignificant sublaxations. In one case neurolysis of the musculocutaneous nerve was undertaken because of postoperative paresis of elbow flexors. The average limitation of outward rotation as compared with the nonoperated side was 19° in adduction and 21° in abduction. There was a measurable difference in strength between the operated and non operated shoulders. The overall functional outcome was good, with a mean Rowe score of 90 points (95% CI, 78–100). Scores of 17 (59%) of the patients were excellent, 7 (24%) were good, 3 (10%) were fair, and 2 (7%) were poor. The Bristow-Latarjet procedure is a good surgical treatment for recurrent anterior-inferior instability of the glenohumeral joint.

CONTROVERSIES IN THE TREATMENT OF THE PARTIAL TEARS OF ROTATOR CUFF

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CHVNG/E - PORTO - PORTUGAL

Introduction

The Partial tears of rotator cuff (RPCR) are an injury that often causes shoulder pain and are potentially disabling. The prevalence of this disease is estimated between 13 and 32% through cadaveric studies.

Objectives

This work aims to compile the latest information on the therapeutic approach of this disease, with particular emphasis on the importance of surgery in this kind of injury and its indications.

Methods

The analysis of the current literature shows that advances in arthroscopy have made possible to visualize and treat lesions that had no indication for surgical treatment. Surgery should be considered when conservative treatment of RPCR shows no improvement after 12 weeks. There is still controversy regarding the surgical technique that ensures better results but it seems that there is a benefit regardless of the surgical technique used.

Results

The evidence suggests that there is benefit in performing surgery of RPCR with > 50% of the footprint affected when conservative treatment is not effective, with significant improvements in the outcome scales (Constant score, ASES score and VAS). The transtendinous technique may be performed in patients with RPCR with less than half the footprint affected. Some authors believe that this way, the progression of the rupture can be prevented by decreasing the load on the intact portion of the tendon.

Conclusions

More homogeneous studies are needed that allow direct comparisons and elaboration of meta-analysis, studies with long follow-up to assess the long-term results.

The evidence suggests that there is benefit in performing surgery with improvements on ASES score and VAS.

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PLENARY SESSION 6 TRAUMA I

LOCKING PLATES – PRINCIPLES OF APPLICATION

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Locking plates are special implants for fracture therapy. From beginning of their use we search the best possibilities how to use these implants. For some special types of fractures are locking plates very appropriately to use them but in some types of fractures we founded failure of osteosynthesis with malunion, broken of plates or screws.

Authors use locking plates especially in metaphyseal fractures. Locking system allows treat of large spectrum of metaphyseal fractures and some types of diaphyseal fracture with relatively early mobilisation of injured part of body. But locking plates are not possible to use for all types of fracture and we cannot say locking plates are gold way for therapy of all types of fracture.

Locking plates are good implants for a lot of types of fracture especially if there are applied correctly according rules of application.

Authors describe their experiences with good results and failure results of using LCP plates. According acquired experiences we can foretell which osteosynthesis will lead to heal or to failure and to problems of healing in most cases.

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PLATING VERSUS INTRAMEDULLARY NAILING IN HUMERAL SHAFT FRACTURES

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Introduction

Plating of humeral shaft fractures is a technique which requires extensive dissection and has significant failure rates in osteopenic bone. Over time, there has been a growing interest in the use of intramedullary nailing in this type of fractures. Theoretically, this technique has greater biomechanical advantage and is minimally invasive.

Material and methods

In this retrospective study, we evaluated 73 patients undergoing surgical treatment of humeral shaft fractures between 2005 and 2015. 42 patients were treated with nailing (anterograde) and 31 patients with plating (anterolateral approach). In the group of patients undergoing nailing, 31% were male and 69% female. The average age at surgery was 66.7 years and the mean follow-up 5.2 years. Regarding the type of fracture, 90% were type A and 10% of type B. Regarding the group that underwent plating, 33% were male and 67% female. The average age at surgery was 57.8 years and the mean follow-up 4.6 years.

Results

The percentage of complications was 36% (15 patients) with 5 patients requiring surgical intervention. The most frequent complication was delayed union (7 cases) followed by nonunion (5 cases). There was 1 case of implant failure, 1 case of neuropraxis and 1 case of subacromial impingement. The average score of Constant-Murley at the end of follow-up was 74. 4 patients developed chronic shoulder pain interfering with everyday life activities. In patients undergoing plating, the rate of complications was 26% (8 patients). The most frequent complications were nonunion (6 cases), 1 case neuropraxia and 1 case of disassembly. 5 patients required re-intervention. The average score of Constant-Murley at the end of follow-up was 80. No statistically significant differences were found between the groups with regard to complications ($p = 0.60$) or compared to Constant score ($p = 0.35$).

Conclusion

There was no significant difference regarding complications or function at the end of follow-up. However, it is important to note the higher incidence of union delay in patients undergoing nailing, which may be caused by distraction at the fracture site. Nailing may have advantages in certain situations such as segmental or pathological fractures.

COMPLICATIONS OF LOCKED INTRAMEDULLARY NAILING IN DIAPHYSEAL FRACTURES OF THE HUMERUS

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Introduction

Locked intramedullary nailing for stabilization of humeral shaft fractures has become popular. The initial enthusiasm is fading due to a number of complications described in literature. Thus, it is necessary to reflect on the indications for this specific surgical procedure.

Material and methods

We evaluated retrospectively 42 patients with humeral shaft fractures, of traumatic etiology, undergoing anterograde locked intramedullary nailing between 2008-2015. We evaluated complications, with special attention to technical errors and need for re-intervention. All patients were operated in emergency context. Pathological fractures were excluded. The mean age was 66.7 years and the mean follow-up of 5.2 years. 31% were male and 69% were female. Regarding the type of fracture, 90% were type A and 10% of type B according to AO classification.

Results

The percentage of complications was 36% (15 patients) with 5 patients requiring surgical intervention. The most frequent complication was delayed union (7 cases) followed by nonunion (5 cases). There was 1 case of implant failure, 1 case of neuropraxis and 1 case of subacromial impingement. The most common technical errors were inadequate nailing position, inadequate length, insufficient distal locking and distraction in fracture site. The average score of Constant-Murley at the end of follow-up was 74. 4 patients developed chronic shoulder pain interfering with everyday life activities

Discussion and conclusion

The role of locked intramedullary nailing in the treatment of humeral shaft fractures is not well defined. The main indications are transverse shaft fractures, segmental fractures, floating elbow, pathological fractures and polytrauma. The advantages are the fact that it is minimally invasive, avoiding the morbidity of extensive incisions. However, complications such as shoulder pain, delayed and non-union, peri-implant fracture and iatrogenic fracture have decreased their use.

The results in this study are according to that described in literature, showing that this is a technically demanding surgical procedure.

This retrospective study, with a small sample, has little scientific evidence. Caution should be taken when choosing this technique since it is technically demanding and the rate of complications which should not be negligible.

DISTAL LOCKING IN SHORT HIP NAILS AND ITS IMPACT ON PERIIMPLANT FEMUR FRACTURES

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Objectives The most common cause of femoral fractures after osteosynthesis of trochanteric fractures with short nails is weakening of the femoral cortex via distal locking and stress concentrations at the tip of the nail. The aim of the study was to verify whether the incidence of peri-implant fractures is dependent upon the distal locking technique.

Methods We prospectively analyzed a group of 849 pertrochanteric fractures (AO/ASIF 31-A1+2) managed with short nails from 2009-2013. Unlocked nailing was performed in 70.1% and distal dynamic locking was performed in 29.9%. The mean age was 82.0 years. Peri-implant fractures were divided into 3 groups according to the height of the fracture in relation to the tip of the nail.

Results In total 17 fractures (2.0%) were analyzed. One peri-implant fracture occurred after locked nailing, whereas 16 cases occurred after unlocked nailing ($p=0.037$). Patients without distal locking had an 85.7% greater risk of peri-implant fracture. Fractures of the proximal femur (Type I) occurred significantly earlier than fractures at the tip of the nail (Type II) ($p=0.028$).

Conclusions Unlocked nails do not guarantee sufficient stability. Distal locking is not the cause of peri-implant femur fractures, but it rather serves to prevent postoperative femoral fractures. We recommend the routine use of distal locking when utilizing short nails.

FEMORAL CORTICAL STRUT ALLOGRAFT IN THE TREATMENT OF PERITROCHANTERIC FRACTURE NONUNION

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Despite recent advances and improved primary fracture treatment protocols, post-traumatic nonunion of peritrochanteric fractures remains a common challenge in orthopedic surgery practice.

The vast majority of intertrochanteric fractures occur in the osteoporotic bone in geriatric populations. Once nonunion develops, the loosened or broken implant can precipitate a condition of bone loss - bone defects, osteopenia and poor bone quality at the nonunion site after repeat surgeries render repeat osteosynthesis with locked nails or plates difficult.

To address this problem, the use of cortical femoral strut allograft provides added osteoconductive potential and mechanical support to conventional internal fixation methods. With this study we describe the use of this type of graft to treat a longstanding peritrochanteric fracture nonunion associated with cephalomedullary nail breakage in a 75 year old female.

A 9 months follow-up, the fracture has united and the allograft has shown radiographic signs of integration into the host bone. There were no intra-operative or post-operative complications. The patient has recovered the ability to ambulate without pain, despite presenting some abductor weakness.

Strict adherence to the principles of nonunion treatment including good reduction, sufficient bone grafting, and firm stabilization of the fragments with the addition of a strut allograft is a good alternative for the treatment of difficult femoral nonunions.



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TIBIAL PLATEAU FRACTURES - HOW DO WE SURGICALLY TREAT THEM AND WHAT CAN BE EXPECTED

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The tibial plateau fractures account for 2% of all fractures, with this percentage increasing in the elderly population. Epidemiological studies are essential tools for understanding their occurrence. The most widely used classification was introduced by Schatzker and divides it into 6 types. Its primary treatment is crucial in the prevention of late complications. Each fracture pattern leads to different types of surgical treatment. In this study 92 cases of tibial plateau fractures surgically treated in a grade I trauma center were retrospectively analyzed from January 2009 to December 2013. Were taken into account the gender, age, type of trauma and associated injuries, fractures classification, type of surgical used and its complications. Functional assessment was evaluated according to the Knee Society Score. We analyzed 34 women and 58 men with an average age of 49 years, being the leading cause of injury road traffic accidents with the left knee being the most affected. The most and the least type of fracture seen were respectively types II and IV. Open reduction and internal fixation with plate, screws and graft placement was the most used. Complications were recorded in 4% of patients, and 2 of them required a total knee arthroplasty. Functionally, 84% had good to excellent results, and the vast majority returned to daily and sport activities prior to the occurrence of the injury. As the knee is one of the main load-bearing joint, timely and appropriate surgical treatment of fractures of the tibial plateau plays a key role in the restoration of the articular surface and prevention of late complications, preventing the progression to post-traumatic arthrosis and promoting reestablishment of a normal joint function.

**PLENARY SESSION 7
PEDIATRIC ORTHOPAEDICS**

**HEINRICH HILGENREINER AND HIS CONTRIBUTION TO MODERN
TREATMENT OF DDH**

Pavel DUNGL

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It was Heinrich Hilgenreiner (1870-1953) who did the most to define radiographic anatomy of patients with developmental (congenital) hip dislocation. He was also the first who introduced a modern physiological treatment of DDH into clinical practice already in 1925 (!) as a reaction to „brutal“ manipulative reduction according to Lorenz which was accompanied by AVN in up to 50% of cases.

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Heinrich Hilgenreiner was born in German speaking part of Bohemia and received his education at Charles University in Prague. He accomplished postgraduate training in surgery and joined the faculty in 1907. Although he was a pediatric surgeon his major interest focused on patients with congenital hip dislocation. In 1925 he defined radiographic criteria for establishing diagnosis of congenital hip dysplasia and hip dislocation. Hilgenreiner lines which measure acetabular angle have become well known to all orthopedic surgeons and radiologists. He was an important advocate of early diagnosis and early treatment. Hilgenreiner formulated five most important rules for early diagnosis and treatment:

1. Every congenital hip dysplasia or dislocation should be treated immediately after establishing diagnosis.
2. Early diagnosis enables easier treatment, regularly without general anesthesia. The younger the child is the shorter the retentive period of treatment is.
3. Early diagnosis may be done by every educated physician.
4. Hilgenreiner brace was used for retentive period of treatment. This device enables outpatient treatment.
5. Hilgenreiner method of early treatment made it possible to abandon reduction maneuvers.

Generally accepted abduction treatment method was recommended 90 years ago by Hilgenreiner. From the current point of view his role was absolutely principal. His diagnostic and radiological contribution to treatment of DDH can be considered as physiological and modern in a real sense of the word. All abduction braces constructed later on were based on his principles and are still generally used.

FACTORS INFLUENCING THE TREATMENT OF DDH

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The conservative treatment of the developmental dysplasia of the hip joint (DDH) has been highly effective in Czech Republic due the current screening program for decades. Assessment of the diagnosis and the treatment decision is given generally during the first two months of the newborns' life and the treatment is therefore rather successful. We analyze an own cohort of 325 consecutive treated and followed-up newborns. We try to identify the critical factors most influencing the course and the efficiency of the treatment.

SELECTIVE SCREENING FOR HIP DYSPLASIA: A REVIEW OF RISK FACTORS AND EFFECTIVENESS OF HARNESS TREATMENT

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NHS Quality Improvement Scotland (NHS QIS) published a health technology scoping report in 2006 acknowledging that there are serious concerns within Scotland in relation to Developmental Dysplasia of Hip (DDH) as there is no formal screening programme in place and there are significant variations between NHS boards leading to confusion for staff and parents. NHS QIS identified need for audit work to improve hip screening in Scotland.

At our DGH, we have a hip screening of newborns programme in place for last 10 years.

Selective ultrasound hip scans are performed for all high risks (abnormal hip examination, breech, family history of DDH, high birth weight female, CTEV and twins of breech babies) by trained sonographer and by consultant radiologist at dedicated hip scan clinic where consultant orthopaedic surgeon with paediatric interest is also present. Hip scans are graded into the Graf grades and managed accordingly.

All newborns who had their first hip scan during one year period (2014) were included in this retrospective study. Out of 428 babies (856 hip scans), abnormality was seen in 119 babies/147 hips (134 Graf 2a/2b, 10 hips were 2c and 3 hips were Graf grade 3). Average age when first scan was performed, was 5 weeks (range 3 weeks to 22 weeks). Analysis of risk factors in 119 babies with abnormal scan was consistent with literature (83 breech, 12 family history, 12 HBW, 10 instability and 2 twins of breech). During this study period there was one late presentation, and no case of avascular necrosis or femoral nerve palsy.

In our experience, selective hip screening by ultrasound scan is effective in avoiding overtreatment and late presentations. However we feel that prospective study over period of 5 years should be performed to help in creating guidelines for hip screening of newborns in Scotland.

FEMOROACETABULAR IMPINGEMENT AS A SEQUEL OF THE PERTHES' DISEASE – DEALING WITH A CHALLENGE

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Introduction:

The prevalence of femoroacetabular impingement (FAI) in standard population is estimated up to 15 %. The Perthes' disease leads to FAI very often and thus represents a serious prearthrosis. Principles of therapy are the same but the approach should be more complex.

Material and Method:

We performed osteochondroplasty via surgical dislocation (SHD) of the 19 hips as a sequel of the Perthes' disease in 19 patients from Oct 2005 to June 2012 from total number of 136 SHD together in this period. We used the WOMAC and NAHS questionnaires for evaluation of the functional outcome.

Results:

We evaluated mid-term results of the osteochondroplasty via SHD in this diagnosis after NAHS and WOMAC score and we compared them to the whole cohort. We did not find any statistical differences between them.

Discussion:

A conventional arthrography are very helpful in pre-operative decision-making besides typical clinical finding and standard X-ray – AP and lateral view. CT 3D reconstruction seems to be very helpful in these cases. The approach to the Perthes-like hips must be specific and individual.

Conclusion:

Most patients are satisfied – up to mid-term results. Nowadays the quality of labrum-cartilage complex besides femoral head shape and secondary acetabular dysplasia seems to be a limiting factor of good results.

**PLENARY SESSION 8
TRAUMA II**

CLINICAL ANATOMY OF THE DELTOID LIGAMENT - A NEW CONCEPT

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From the beginning of the 19th century was made relatively wide research of the deltoid ligament / DL / . In the literature it is DL anatomically divided from 2 to 8 individual components. The generally accepted theory of 6 parts with graduation on the superficial and the deep layer of the DL. Was performed anatomical preparation of 30 cadaveric ankles. Always was the same way with a focus on what the most precise anatomical description of the topography with the origin and the insert of fibers. The basic hypothesis of the research was that there exists a lig. tibiofibulare anterius, confirmation or refutation of so far in the literature described part of the DL. At the same time we ask the question of whether a widely accepted the traditional division of the superficial and the deep portion of the DL is anatomically conclusive.

MANAGEMENT OF ANKLE FRACTURES AFTER SURGICAL FIXATION

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Aims: To identify the common practice rehabilitation plans in our department for patients after surgical fixation of an ankle fracture.

Background: Currently, there are no consensus guidelines on how to best manage patients with ankle fractures after surgical fixation; whether they should be mobilised early or restricted with non-weight bearing instructions. The evidence base does not convincingly support one method preferentially.

Methods: This was an observational audit of 29 surgically managed ankle fractures (excluding external fixation) over a 7-month period. Patients were retrospectively followed up for 1 year and their notes were reviewed to identify their post-operative management course.

Results: There were 7 patients lost to follow-up. Immediately post-op, the majority (93%) of patients were instructed to non-weight bear with only 2 (7%) being allowed to touch weight bear. On average, patients were allowed to fully weight bear on post-op day 50. The mean time until out of plaster was 43 days and discharge from clinic was at 76 days post-op. An aircast boot was given to 8 (28%) and outpatient physiotherapy referral was made in 8 (28%). In terms of complications, 1 (3%) patient had a non-union of the fracture site, 3 (10%) required removal of metalwork at a later date and 2 (7%) had a superficial wound infection requiring oral antibiotics.

Conclusions: Our department is conservative in the management of ankle fractures after surgical fixation. This study was not designed to specifically assess outcomes but rather identify current trends in surgical practice. We may need more convincing evidence to support early mobilisation before changes in practice are seen.

OSTEOCHONDRAL LESIONS OF THE ASTRAGALUS: REVIEW OF 8 CASES SURGICALLY TREATED

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Introduction:

Osteochondral lesions of the astragalus correspond to cartilage and adjacent subchondral bone lesions. Often, they appear as a result of a traumatic event, and when left untreated, may result in chronic pain and functional impairment.

Material and methods:

We present a retrospective analysis of 8 clinical cases, with the use of clinical evaluation, application of the AOFAS score and documentation of the scar evolution by imaging means. Between 2011 and 2015, 8 patients with post-traumatic pain unresponsive to nonsurgical treatment were subject to surgery. Arthroscopic examination was performed in all of them. According to the Raikin grid, 4 of the lesions were located in zone 4 (inner equatorial), 2 in zone 1 (antero-internal) and 2 in zone 2 (anterior-central). Conversion to open surgery was performed after initial arthroscopic assessment. After debridement and microfractures were performed, autologous bone collected from de fibula (after fibular osteotomy) was used to fill de osteochondral defect. A layer of periosteal membrane was then used to seal the lesion, using fibrin glue. Clinical evaluations, x-ray and MR imaging were used in follow-up.

Results:

All patients progressed favorably and healing of osteochondral lesions took place in all cases, as demonstrated by MRI. Time to healing was between 5 and 8 months. The average AOFAS score was 82 points.

Discussion and Conclusion:

The ideal treatment of osteochondral lesions of the Astragalus unresponsive to conservative treatment is still not well established in literature. The results of this study demonstrate that with a single operation can get healing of these lesions in 100% of cases, by same time obtaining a good result functional. However, the limited number of patients in this series, does not allow us to take full conclusions for daily clinical practice.

HOOK OF HAMATE STRESS FRACTURE

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Hamate hook (HH) fracture is an uncommon condition with higher incidence among individuals participating in racquet sports. Clinical presentation can be misleading and resemble other conditions like ulnar nerve entrapment or ulnar nerve thrombosis which is the reason why HH fracture is often overlooked.

A case of 17-year-old tennis player with dominant hand weakness, ulnar sided pain and paresthesia is presented. There was no history of trauma. Tennis play aggravated symptoms so the patient was advised to cease activity and rest for two months but the symptoms persisted and were now present in everyday activities. Radiographs were normal, bone scans showed increased uptake in hypothenar region. Since there was no improvement for another 6 months, patient underwent open Guyon tunnel release and physical therapy. Upon return to everyday activities symptoms relapsed.

Clinical examination revealed tenderness over the HH, hypotrophic hypothenar muscles, paresthesia, hand weakness and positive HH pull test which raised suspicion of the HH fracture. Tunnel view of wrist and CT scan of carpus revealed an old HH fracture. Patient underwent surgical treatment and the fractured hook was excised. DASH score was obtained preoperatively and 1-month postoperatively.

Postoperative period followed with 10 days of immobilization and physical therapy. There was significant improvement of pain, function and strength one month after surgery. After two months patient was pain free and returned to tennis. DASH score was 22.5 and 5.0, respectively.

In patients involved in racquet sports with hypothenar pain and ulnar sided paresthesia, history and clinical examination are essential to establish the HH fracture diagnosis and avoid prolonged treatment. Symptoms can mimic ulnar nerve entrapment caused by local tissue oedema surrounding the HH which forms Guyon's tunnel. Treatment of choice for HH nonunion is excision of fractured fragment, which provides fast recovery and return to full activity.

COMPARATIVE ANALYSIS OF RESULTS FOLLOWING FEMORAL FIXATION METHODS (APERTURE VS NON APERTURE) IN ARTHROSCOPIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION (TIGHT ROPE VS INTERFERENCE SCEW) – A PROSPECTIVE STUDY

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Background: Several methods are available for fixing the femoral side of a hamstring autograft in ACL reconstruction and the best method is unclear. Biomechanical studies have shown varying results with regard to fixation failure. There are 2 fixation types for ACL grafts in femoral tunnel: aperture fixation and non-aperture fixation. Aperture fixation describes graft fixation at the opening of the bone tunnel, typically with an interference screw. Suspensory fixation describes graft fixation that is remote from the intra-articular space (i.e., at the femoral or tibial cortices) using endobutton or tight rope. Our study compares the results following two methods. **Material and Methods:** A total of 60 patients were undertaken in the study and institutional review board approval was taken along with patient's consent. They were divided into two groups randomly. The ACL reconstruction was done in two groups using endobutton in 30 and interference screw in another 30. The tibial site was fixed with interference screw in all the cases. Our primary outcome measure was comparison of lysholm II score and tibial translation while secondary outcome was surgery time, tourniquet time, lachman test, pivot shift, range of motion, Quadriceps control. **Results:** At 6 months follow up 60 patients completed clinical evaluation. The primary outcome measure Tibial translation using rolimeter (KT-1000) was 3.6 ± 1.2 mm(tight rope) and 2.9 ± 1.12 mm(interference screw). $P=0.027$ is considered to be statistically significant. The post op lysholm II score was 96.5 ± 6.42 (IS group) and 95.9 ± 8.6 . P value equals 0.77 this difference is not statistically significant. There was no significant complication in either group. In addition no difference was found in two groups in secondary outcomes. **Conclusions :**Our study concludes that while there is significant difference in tibial translation the lysholm II scoring and secondary outcomes showed no significant difference in the two groups.

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PYROCARBON ADAPTIVE PROXIMAL SCAPHOID IMPLANT (APSI) - LONG TERM RESULTS IN THE TREATMENT OF SCAPHOID NONUNION ADVANCED COLLAPSE

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Fractures of the proximal pole of the scaphoid with associated avascular necrosis and nonunion are well known to be problematic. The most accepted treatment options include some form of carpal fusion (with its inherent loss of mobility) or proximal row carpectomy (with associated loss of wrist and hand strength). An alternative technique is interpositional arthroplasty with a pyrocarbon adaptive proximal scaphoid implant (APSI).

The aim of this study was to evaluate the long-term functional outcome of the 12 patients submitted to APSI type arthroplasty in our institution. All patients were male, with a mean age 39 years (range 28-55 years). In 8 patients (66%) the injury occurred in the dominant hand. All patients were operated by the same senior surgeon through an open dorsal approach. They were followed in the outpatient clinic and performed the same post-operative rehabilitation protocol. Mean follow-up time was 6.5 years (range 5-8 years). The patients were evaluated using the Quick-DASH Score and the Mayo Wrist Score.

There were no intra-operative or immediate post-operative complications. Despite all patients showing radiographic signs of peri-implant osteolysis, only one patient was dissatisfied with the surgical procedure at final follow-up. All of the patients kept performing the same professional activities, although half reported minor adjustments in their activity level after surgery. Mean functional capacity, measured by the Mayo Wrist Score was 67.5 points (range 50-80 points), corresponding to a "Satisfactory" level. Applying the Quick-DASH score resulted in 25% mean disability (range 3%-47.7%).

In the reports published to date, interpositional arthroplasty with an APSI type implant allowed a faster return to activity, when compared with carpal fusion or carpectomy. Our early results are encouraging, warrant further and longer studies and support the use of pyrocarbon implants as a safe and effective primary procedure.

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CONSERVATIVE TREATMENT OF PEDIATRIC SCAPHOID FRACTURES - A CASE OF UNEXPECTED UNION

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The scaphoid is one of the eight carpal bones and has great importance in the biomechanics of the wrist. It articulates with five surrounding bones and over 80% of the bone is covered in articular cartilage leaving limited space for entrance of the supplying arteries. The proximal pole is dependent on intramedullary vascularization and thus especially susceptible to avascular necrosis.

In the pediatric population, adolescents are most frequently affected by this type of fracture. The indications for surgical treatment include more than 1 mm displacement or 45 degrees of angulation and failure of conservative treatment with nonunion or avascular necrosis.

40 We present the case of a 13 year old patient who sustained a fall on the outstretched hand in September 2013. He complained of wrist pain and radiographs demonstrated a fractured scaphoid. He was immobilized in a thumb spica below elbow cast. After 8 weeks, the cast was removed and a CT scan was performed showing a “non-united transverse fracture of the waist of the scaphoid, with cubital displacement of the proximal fragment which shows signs of avascular necrosis”.

Surgical treatment was decided but the concomitant diagnosis of a cardiac arrhythmia mandated that surgery be postponed for the next few weeks and the patient was eventually lost to follow-up. He returned to our outpatient clinic only 22 months after removing the cast – by that time he was completely asymptomatic, with full pain-free range of motion and no loss of grip strength. Most interestingly, repeat radiographies showed that the fracture had united with no signs of bone avascular necrosis or collapse.

This is an interesting case of unexpected scaphoid union that should make us reconsider the boundaries and importance of conservative treatment of this type of fractures, especially in the pediatric population.

ODONTOID FRACTURE NONUNION IN AN ADOLESCENT

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Odontoid fractures represent 10 to 16% of all cervical fractures. For type II odontoid fractures, surgical treatment is recommended, as conservative treatment results in nonunion in up to 40-75% of cases and is associated with secondary complications such as persistent pain or the development of neurological deficits, which can occur months or even years after the initial injury. Nonunion can be predicted by the initial distraction or displacement of the fracture.

We present the case of a 13 year old adolescent who suffered violent head trauma in a diving accident. By the time he was injured he was living in another European country and was discharged home after one month of cervical collar immobilization and bedrest.

41 He was referenced to our outpatient clinic seven months after the initial injury because of persistent pain with cervical movement, despite having full range of cervical motion, with no neurological deficits. Dynamic cervical X-rays and cervical CT scan were performed and showed a non-united type II odontoid fracture that did not adequately reduce with hyperextension.

The patient was submitted to surgical treatment – C1-C2 fusion through a posterior approach using iliac crest autograft (Harms technique) and pos-operative cervical collar immobilization for 8 weeks. Follow-up cervical X-rays and CT scan showed adequate reduction and screw position. To this date, the patient remains with pain free range of motion, no neurological deficits and no instability in dynamic cervical X-rays.

Odontoid fracture nonunion can result in very serious complications and surgical treatment of this type of fracture is generally accepted and yields very favorable results.

RESULTS OF INTERNAL FIXATION IN COMPOUND FRACTURE (I,II and IIIA and IIIB) PRESENTING AFTER GOLDEN PERIOD 6 HOURS

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BACKGROUND: There are very few studies describing the result of internal fixation in compound fracture in delayed golden period "6-24"hours .**MATERIAL**

AND METHODS: All cases of compound fractures Type I ,II Type IIIA and IIIB were included .These were operated after the golden period but before 24 hours of injury .The study includes a total of 40 patients .There were 36 males and 4 females. Age ranged from 12 years to 58 years with the mean age of 28 years. Gustilo – Anderson classification was used to classify the fractures. Follow up period was of 36 months (mean 26.3 months) . the purpose of following study is to asses the infection rates, union, implant failure and need for additional procedures after internal fixation was done in compound fracture in "delayed golden period" that is 6-24 hours after adequate debridement of the wound and appropriate antibiotic coverage. **RESULTS:** Out of 40 fractures 14 were type I 12 were type II, 14 were type III compound fractures. 17 patients presented within 6 -12 hours, 23 presented from 12-24 hours. The patients were taken for debridement and fixation after 16.7 HOURS (MEAN) hours of injury. Average infection rate was 9.2%.(Type 1 - 7.14%(1/14),Type 2- 8.33%(1/12), Type 3 - 14.2%(2/14))which was comparable or less then in literature .Non union was seen in 5 patients . 3 were managed with bone grafting while 2 were managed with exchange nail. There was no incidence of implant failure. Functional evaluation was done according to the Kattenjian Criteria. Good to excellent results were seen in 70 percent of patients. **CONCLUSION:** There are definitive advantages of internal fixation in open fracture provided infection can be prevented by careful and radical debridement along with judicious use of antibiotics.

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POSTERS**P01 - LOCAL THERAPY OF OSTEOARTHRITIS OF THE KNEE JOINTS BY PLATELET-RICH PLASMA**

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Osteoarthritis leads the prevalence of rheumatic diseases among others. Progression of the disease leads to loss of cartilage and other components of the joint and is one of the major causes of premature disability in young adults, as well as chronic pain, reduces the quality of life of older people. The search for safe treatment of osteoarthritis of the knee is an actual problem. One such method is the use of platelet rich plasma (PRP). Determine the effectiveness of the treatment of patients with osteoarthritis of the knee by PRP was the purpose of the study. The study included 84 patients (54 women, 30 men, mean age 53) with osteoarthritis of the knee joints of 2-3 degrees. In the study group (54 patients, mean age was 52 years) were treated with PRP. In the control group (30 patients, mean age 55 years) used nonsteroidal anti-inflammatory medicines, physiotherapy. Follow-up of 3 months. The effect was evaluated on a scale of verbal assessment of treatment effectiveness, a visual analog pain scale (VAS) and Lequesne scale. The number of patients with osteoarthritis of the knee, marking the effectiveness of intraarticular injection of PRP for 3 months is 29% higher than after the application of a non-steroidal anti-inflammatory medicines. The intensity of pain in patients of the main group decreased by an average of 35 mm - from moderate to low. The patients in the comparison group only decreased pain while taking anti-inflammatory drug, after the abolition of the pain was renewed with the same intensity. Index Lequesne in patients treated with PRP decreased from 5.3 to 0, 7 for 3 months follow-up. Intraarticular injection of PRP in the treatment of patients with osteoarthritis of the knee joints can reduce the severity of pain, improve function of the knee for 3 months after treatment.

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P02 - THE MODIFIED “HARRINGTON-PROCEDURE” FOR METASTATIC PERI-ACETABULAR BONE DESTRUCTION

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Introduction

The pelvis represents one of the most commonly affected sites in patients with bony metastases and although surgical interventions are less frequent compared to metastases of the long bones, the frequency will increase due to continuous improvements in life quality and prognosis for the survival in patients living with invasive cancer. Treatment strategies for peri-acetabular metastatic lesions include non-operative options such as systemic chemotherapy, local irradiation, bisphosphonates or hormonal treatment and surgical reconstruction of the pelvis.

Patients and Methods

We describe the outcome in 9 patients operated for metastatic peri-actetabular and iliac bone destruction using a modified technique of Harrington’s procedure. Total hip replacement implants augmented by two to three threaded pins and cement were used to restore bony continuity of the pelvis and to achieve a stable construct which allows immediate fully-weight bearing mobilisation.

Results

Between 2006 and 2012, 9 patients were treated with this technique. The mean age of the patients was 62.2 years. Acetabular destruction was graded according to Harrington’s classification of peri-acetabular metastatic destruction, as class IV in one case, class III in six- and class II in two cases. The pre-operative ASA Score ranged from II-IV. There were no intra-operative deaths or major complications such as excessive haemorrhage, deep infections, lesions of the femoral nerve, loss of fixation or dislocations until final follow-up. Eight patients achieved an improvement of their functional status post-operatively. One construct required revision, 4 patients had died due to their underlying disease 10 to 36 months after surgery.

Conclusion

We found this technique an effective, reproducible and long-lasting method to relieve pain and improve function in patients with destructive metastatic lesions of the peri-acetabular bone. Although performed in severely ill patients with generalized metastatic disease we had no intra- or postoperative death and observed no major complications.

P03 - SILVER CONCENTRATIONS FOLLOWING EXTREMITY RECONSTRUCTION USING SILVER-COATED MUTARS MEGAPROSTHESES

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Introduction: Silver-coated megaprotheses have been shown to reduce the infection rate following extremity reconstruction after tumour resection or in case of revision arthroplasty. Nevertheless, there is less information about systemic silver exposure and possible side effects.

Materials and Methods: Between 2004 and 2014, 31 patients received MUTARS megaprotheses with galvanised silver coatings (Implantcast, Germany). Ten patients received the prosthesis after resection of a malignant soft-tissue or bone tumour and 21 silver-coated implants were used for revision surgeries. The mean postoperative follow-up ranged from one to 130 months (mean, 48).

Blood for silver concentration determination was taken from every patient within the first days following surgery as well as at every six months at outpatient treatment. The concentration of silver was determined using inductively coupled plasma mass spectrometry (ICP-MS).

Results: During the follow-up three patients died of disease, four died due to an unrelated cause and one patient was lost to follow-up.

Overall, 23 patients were available for determination of blood silver concentrations. Within the follow-up we could observe a slight increment of systemic silver concentrations with a decrease after a peak at 30 months. Thereafter, we found an undulation course of blood concentrations with two further peaks which might be caused by several cases of re-infections and massive release of silver ions from prostheses' surface.

Discussion: In the current series we observed an undulating course of silver concentrations in the blood of our patients which might be caused by several cases or re-infections or other implant-associated complications leading to an increased release of silver ions from the prosthesis' surface. We could not identify any systemic complications like polyneuropathia or other toxic reactions. Therefore, we can state that silver-coated implants seem to be a save solution in case of megaprothetic reconstruction. Nonetheless, we recommend monitoring of silver concentrations in the blood.

P04 - BLOOD MANAGEMENT IN REVISION TOTAL HIP ARTHROPLASTY FOR METAL-ON-METAL DEVICES: THE EFFICIENCY OF AN ORTHOPAEDIC AUTOTRANSFUSION SYSTEM

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Introduction: The aim of this series was to analyze the efficiency of an orthopaedic autotransfusion system used during revision arthroplasty of metal-on-metal (MoM) devices.

Materials and Methods: Three consecutive patients underwent revision surgery of their total hip arthroplasty due to wear of the polyethylene-metal sandwich inlay or local massive metallosis with aseptic loosening following an average follow-up of 187 months (range, 143 to 212).

46 All hip prosthesis underwent puncture to exclude prosthetic infection, further blood was taken to measure the serum metal ion concentrations, preoperatively. Perioperatively, blood was collected using an autotransfusion system OrthoPAD with an integrated percolation system. Blood was obtained from collection bag before and after filtration and analyzed for Co and Cr concentrations. At that time, there was no retransfusion of the collected and filtrated blood due to unknown metal ion concentrations.

Results: The mean preoperative serum Co and Cr concentrations were 24.14 µg/L (range, 0.04 to 71.70) and 17.78 µg/L (range, 0.59 to 51.31), whereas the local concentrations in the aspiration fluid were 100-fold and 255-fold higher (mean: Co: 2451.26 µg/L and Cr: 4542.68 µg/L).

The Co and Cr concentrations measured in the collected blood before filtration and wash out were 5.68 µg/L (range, 0.94 to 11.80) and 468.61 µg/L (range, 8.76 to 1383.0), respectively. Following filtration, the metal ion levels decreased markedly to average concentrations of 0.66 µg/L and 46.09 µg/L for Co and Cr, although these differences were statistically not significant.

Discussion: Several studies showed that intraoperative cell salvage reduces allogenic blood transfusion rates in joint arthroplasty and emphasized the cost-effectiveness. On the other hand, the current series showed that in case of revision of MoM hip devices an autologous blood retransfusion is not recommendable due to the fact, that metal ions are still contained in the collected blood following filtration and wash out.

P05 - THE ROLE OF GENETIC FACTORS IN THE DEVELOPMENT OF VTEC IN ORTHOPEDIC PATIENTS

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The frequency of VTEC upon TEP of large joints remains high, despite the introduction of modern means of prevention. Acquired factors are most important, but hereditary coagulopathy is not much investigated.

In order to prevent the development of VTEC during arthroplasty, all patients were assessed for acquired and congenital risk factors. 128 patients were studied, of whom 70 had a total-hip and 58 a knee arthroplasty. 45.31% were diagnosed with varicose veins, 8.59% had a phlebectomy. 80% had cardiovascular disorders..

All patients were screened for latent thrombophilia as a risk factor for VTEC. We studied the mutation of 8 major coagulation factors. 100% of patients reported at least one mutation. One had homozygous and heterozygous mutations of prothrombin, increasing VTEC 3.4 times more than the general population. Leiden heterozygous mutations (3-8 times higher), was detected in 3.13% of the patients. Polymorphism of the seventh coagulation factor was detected in 13.28%. Mutations F13: G> T, which increase the risk of VTEC by 50% were detected in 43.75% of the patients. Fibrinogen gene polymorphism was detected in 38.28% of the patients, which increases the risk of venous thromboembolism 4.3 times. Polymorphism of α -2 integrin was detected in 65,63%, β -integrin in 37, 28.91%, causing aspirin resistance in all holders of this factor. Polymorphism of plasminogen inhibitor PAI-1 was detected in 82.03%. That in combination with diabetes significantly increases the risk of VTEC. 98.44% of patients had a combination of mutations in different genes. VTEC was revealed in 17.19% patients. Of these, 4.69% - had floating thrombus. Two of six had a family history of death due to PE.

Based on these data a pathogenetic-based prevention method for VTEC was proposed. An integrated approach to risk assessment in VTEC allows to avoid fatal complications after large joint arthroplasty.

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KAISERSTEIN PALACE
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P06 - MINIMALLY INVASIVE TECHNIQUES IN TOTAL KNEE ARTHROPLASTY

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Minimally invasive arthroplasty has several advantages over the conventional method: modern medical care level, small incision, low blood loss, insignificant pain, early recovery of limb function, shortened hospital treatment.

The treatment results of 62 patients (group 1) operated using minimally invasive techniques, and 103 patients (group 2), with classic knee arthroplasty were analyzed. Group 1 patients had «quadriceps-sparing» access, with a minimally invasive technique using a special Zimmer instrument. The particularity of using this instrument is in resecting the femur and tibia through a shortened parapatellar incision without damaging the quadriceps. Group 2 patients had standard access arthroplasty. The short and medium-term results were evaluated using Oxford 12 item Knee Score and the KSS scale.

Minimally invasive knee arthroplasty helped to significantly reduce intraoperative, drainage and total blood loss by 1.5 times, thus reducing the frequency of donor blood transfusions 5 times. The evaluation of immediate results shows that pain intensity was lower in group 1 patients. Functionality according to the KSS scale was better in patients with minimally invasive arthroplasty by maintaining the extensor mechanism of the knee joint during surgery. Radiometric results show that the small incision does not degrade the quality of the endoprosthesis. Medium-term results showed that over a period of one to four years, pain was significantly reduced, status and function indicators of the knee joint were better on the KSS and the Oxford scales in group 1 patients. The larger number of thromboembolic complications 20.39%, including non-fatal pulmonary embolism was observed in group 2 patients. The incidence of VTEC in patients with minimally invasive knee arthroplasty was 2.5 times less - 8.06%.

Thus, minimally invasive knee arthroplasty is a modern high-tech method which reduces trauma during surgery and provides good anatomical, radiographic and functional results in 97.55% of patients.

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CEOC^{11th}

JUNE 9-10, 2016

KAISERSTEIN PALACE
CZECH REPUBLIC

P07 - ARTHROSCOPY AS A WAY TO CORRECT COMPLICATIONS OF KNEE ARTHROPLASTY

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Total endoprosthesis (TEP) of the knee is an effective treatment method for patients with end-stage osteoarthritis. But, despite the success of joint replacement, the number of complications and poor outcomes reached 3,3-13,2% according to different authors.

The aim of the study was to diagnosis and treat complications of TEP of the knee.

15 (2.84%) out of 527 patients with knee replacement had arthroscopy. Indications for arthroscopic treatment were: persistent unexplained pain without signs of aseptic loosening and infection, recurrent hemarthrosis and chronic synovitis during the first year after surgery, whereby conservative treatment was ineffective and no microflora growth in knee joint punctate. Loosening is an indication of aseptic instability if there is no clear radiographic evidence. The anterior chamber of the knee, the medial facet of the polyethylene insert, the medial, lateral and upper inversion of the knee joint, the joint surface of the patella, patellar balance, the intercondylar notch, the lateral facet, the "spike" of the polyethylene liner, the contact area of the tibial component and the tibia were evaluated. With an arthroscopic hook, a blunt obturator and arthroscopic mines, the stability of the tibial and femoral components of the endoprosthesis were evaluated.

Arthroscopy revealed a fracture of the hinge connected with a tumor in one patient. Another was diagnosed with aseptic instability, revision knee arthroplasty was performed. Two patients were diagnosed with arthrofibrosis, a release, synovectomy and scar excision were performed, motion in the knee joint was increased. Two patients had recurrent hemarthrosis, where synovial membrane malformation was revealed, coagulation was performed. 4 patients were diagnosed with reactive synovitis, joint lavage was performed. Seven patients had chronic pain, denervation of the medial joint capsule was performed. Arthroscopy allowed to choose the optimal treatment of complications, in some cases, to avoid unjustified knee arthroplasty revisions.

P08 - THE ROLE OF GENETIC FACTORS IN THE DEVELOPMENT OF VENOUS THROMBOEMBOLIC COMPLICATIONS IN ORTHOPEDIC PATIENTS

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The frequency of venous thromboembolic complications (VTEC) upon total endoprosthesis (TEP) of large joints remains high, despite the introduction of modern means of prevention. Acquired factors are most important, but hereditary coagulopathy is not much investigated. In order to prevent the development of VTEC during arthroplasty, all patients were assessed for acquired and congenital risk factors. 128 patients were studied, of whom 70 had a total-hip and 58 a knee arthroplasty. 45.31% were diagnosed with varicose veins, 8.59% had a phlebectomy. 80% had cardiovascular disorders..

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All patients were screened for latent thrombophilia as a risk factor for VTEC. We studied the mutation of 8 major coagulation factors. 100% of patients reported at least one mutation. One had homozygous and heterozygous mutations of prothrombin, increasing VTEC 3.4 times more than the general population. Leiden heterozygous mutations (3-8 times higher), was detected in 3.13% of the patients. Polymorphism of the seventh coagulation factor was detected in 13.28%. Mutations F13: G> T, which increase the risk of VTEC by 50% were detected in 43.75% of the patients. Fibrinogen gene polymorphism was detected in 38.28% of the patients, which increases the risk of venous thromboembolism 4.3 times. Polymorphism of α -2 integrin was detected in 65.63%, β -integrin in 37, 28.91%, causing aspirin resistance in all holders of this factor. Polymorphism of plasminogen inhibitor PAI-1 was detected in 82.03%. That in combination with diabetes significantly increases the risk of VTEC. 98.44% of patients had a combination of mutations in different genes. VTEC was revealed in 17.19% patients. Of these, 4.69% - had floating thrombus. Two of six had a family history of death due to PE.

Based on these data a pathogenetic-based prevention method for VTEC was proposed. An integrated approach to risk assessment in VTEC allows to avoid fatal complications after large joint arthroplasty.

P09 - USING HIGH-INTENSITY MAGNETIC STIMULATION IN OLDER WOMEN, WHO UNDERWENT TOTAL KNEE ARTHROPLASTY

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Total endoprosthesis (TEP) of the knee is the most effective method to reduce pain and recover joint function in patients with terminal stage osteoporosis. Despite the high efficiency of arthroplasty, surgery is highly traumatic and long degenerative processes in the operated limb often lead to disturbances which significantly reduce muscle strength and slow down the process of rehabilitation.

Two groups of women were included in the research: 1-control (n=31, average age 66,2), 2-main (n=3, average age 65,9). Each patient had a TEP of the knee. High-intensity magnetic stimulation (HMS) was additionally used in the rehabilitation of group 2 patients in the topographic area of the femoral nerve, stimulating at a frequency of 4 - 10 Hz according to the developed algorithm. Indices of the M-response amplitude (A, Mv) and residual latency (L, ms) to stimulating electromyography (sEMG) of the quadriceps were evaluated before and after treatment in both groups; range of motion of the knee joint, circumference of the thigh in the mid-third, as well as pain as per the visual analogue scale pain score (VAS).

It was observed that in both groups the amplitude of M-response before rehabilitation was on average $A=1,4\pm 1,5$ mV, $L=4,3\pm 1,2$ ms. At day ten: Group 1 $A=1,8\pm 1,5$ mV, $L=4,7\pm 1,2$ ms; Group 2 had higher indices, $A=2,9\pm 1,3$ mV, $L=3,5\pm 1,7$ ms. Range of joint motion in group 2 was more: $87,0\pm 1,0$, compared to $76,0\pm 1,1$ in control; thigh circumference in group 2 was higher $48,8\pm 2,0$ cm compared to $44,2\pm 1,2$ cm in control. VAS scale on day 10 showed $5,5\pm 2,1$ points in group 1 and $3,2\pm 1,8$ points in group 2.

HMS together with standard therapy helps to significantly increase the efficiency of rehabilitation in orthopedic patients.

P10 - SONICATION IN DETECTION OF ORTHOPAEDIC IMPLANT INFECTIONS

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Introduction: The diagnosis and treatment of orthopaedic implant infections is often difficult, especially when there are no obvious clinical signs. With the use of sonication of removed orthopaedic material we can prove presence of biofilm. Method has already shown encouraging results on the field of prosthetic implant infection diagnostics.

Objectives : The aim of the study was to detect infections of orthopaedic material using sonication and standard diagnostic methods, and to compare the obtained results of both methods.

Methods: For the purpose of the study we sonicated all explanted material at revision surgery and cultured the obtained samples. At the same time soft tissue biopsies were collected and analyzed for infectious agents. The results were compared, analyzed and additional therapy was applied, if an infection of the material was proven.

Results: During the period from September 2009 to the end of June 2014 we studied 309 cases (268 patients) of revision surgery (227 cases of revision hip arthroplasty, 45 cases of revision knee arthroplasty, 12 cases of revision foot surgery, 25 cases of revision spine surgery). Of studied cases infection was proven in 26 (8,4%) cases by soft tissue biopsies only, 112 cases (36,2%) were diagnosed both by soft tissue biopsies and sonication, 61 cases (19,8%) were diagnosed only by sonication of explanted prosthetic material and in 110 cases (35,6%) all results were negative. The statistical analysis has shown statistically significant ($p < 0,05$) improvement of infection detection using sonication. The majority of sonicate isolates were coagulase-negative *Staphylococci* followed by mixed flora, *S. aureus*, *P. acnes*, *Streptococcus spp.* and other.

Conclusions: In our series the additional use of sonication shows an improvement in the diagnosis of orthopaedic implant infections. Despite certain limitations of the method, sonication should be considered in doubtful cases of revision for 'aseptic loosening' and also after preoperative antibiotic treatment.

P11 - SYSTEMIC EFFECT ON THE SKELETON OF LOCALLY ADMINISTERED BMP2 AND BMP7 CONTAINING BONE DEVICESIvo Dumic-Cule¹, Lovorka Grgurevic¹, Slobodan Vukicevic¹, Marko Pecina²¹Laboratory for Mineralized Tissues, Center for Translational and Clinical Research, School of Medicine, University of Zagreb, Zagreb, Croatia; ² Department of Orthopaedic Surgery, School of Medicine, University of Zagreb, Zagreb, Croatia

Local application of BMP2 and 7 bone devices have been approved by FDA for long bone fractures, non-unions, and spinal fusions. It is unknown whether systemic release of BMP2 and 7 following a local implantation could impact systemically the bone volume. Also, it is not understood whether systemic their effects on bone require calciotropic hormones. To address these questions we explored the effect of systemically administered BMP2 and 7 on bone using our newly developed rat model with a low level of calciotropic hormones.

Surgical removal of thyroid and parathyroid glands (TPTx) in rats resulted in low level of thyroid hormones, PTH, calcitonin and 1,25(OH)₂D₃, followed by the bone loss evaluated by microCT and serum markers of bone formation and resorption, including osteocalcin, C-telopeptide, osteoprotegerin and receptor activator of nuclear factor kappa-B ligand. Also, BMP2 and 7 were tested *in vitro* to estimate their influence on bone cell activity. The administered doses were calculated according to published bioavailability results from pre-clinical BMP2 and 7 studies.

TPTx caused bone loss which was restored by systemic administration of 10-70 µg/kg of BMP2 and BMP7. BMP2 showed a higher capacity for enhancing trabecular microarchitecture, including increased trabecular number and diminished trabecular separation. On the contrary, BMP7 increased the trabecular thickness. *In vitro* assays revealed that BMP2 and 7 increased the number and activity of both osteoblasts and osteoclasts.

In summary, both BMP2 and 7 showed the ability to increase *in vivo* the bone volume in a rat model of low calciotropic hormones. Thus, locally administered BMP2 and 7 bone devices will not systemically influence the bone metabolism, even if in treated patients an amount of BMP enters their circulation.

P12 - MICROBIOLOGY OF ALLOGRAFT FEMORAL HEAD AND BONE CHIP SAMPLES FROM SINGLE BONE BANK

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Femoral heads as allografts are routinely obtained from living donors during total hip arthroplasty and are a valuable source of bone grafts in everyday orthopaedic surgery. However, all these allografts need to be assessed for bioburden before transplantation. Aim of this study is to identify the most common microorganisms responsible for allograft contamination.

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Records of femoral head and bone chip banking between 2011 – 2013 were reviewed retrospectively. A total of 215 living donors, 115 females and 100 males (mean age 60.2 years; range 25-83 years), donated 200 femoral heads and 205 bone chips. They were all harvested during THA for primary or secondary osteoarthritis. Tissue samples of femoral heads and bone chips were separately obtained for bacterial and fungal bioburden testing. Microbiological growth was obtained from 24% of femoral heads and 11.7% of bone chips. We discarded 61 femoral heads and 55 bone chips. Fifty-seven femoral heads and 53 bone chips were discarded because of microbiological contamination and 4 femoral heads and 2 bone chips were discarded because of technical issues. The predominant microorganisms isolated were skin commensals like coagulase-negative Staphylococci found in 45 tissue samples followed by Corynebacterium species and Bacillus species in 6, and Streptococcus viridans in 4 tissue samples. Other microorganisms were only sporadically encountered. Isolated skin commensals and the fact that less than 1% of the femoral and bone chip donors eventually develop periprosthetic hip joint infection showed that contamination during handling, obtaining tissue samples and packaging rather than precedent local infection or transient bacteriemia is the main cause of allograft contamination. Decontamination methods could be applied during bone processing and could potentially decrease the contamination of the final bone products, but cost/effectiveness analysis should be performed first.



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P13 - ALLOGRAFT BONE HARVEST DURING TOTAL HIP ARTHROPLASTY ADDITIONAL TO FEMORAL HEAD

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Although regarded as a gold standard, harvesting of autologous bone graft is associated with donor site morbidity and a number of complications. An alternative is allograft with limited availability as the main shortcoming. Femoral heads as allografts are now routinely obtained during total hip arthroplasty. A small but valuable amount of pure cancellous bone graft of high quality can be obtained in addition. An additional harvest site is the proximal metaphyseal region of femur. We present a simple, useful and inexpensive technique for one harvest that can be performed utilizing ordinary instruments during total hip arthroplasty and is very convenient when there is need for small amount of cancellous bone.

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P14 - HEALING OF OSTEOCHONDRAL KNEE LESIONS AFTER TREATMENT WITH BIOREACTOR- ENGINEERED TISSUE - MICROCT ANALYSIS

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The aim of this study was to engineer tissue grafts and use them for the autologous treatment of chronic osteochondral defects in sheep stifle joint thus enabling restoration of cartilage and subchondral bone.

Eight sheep were randomly assigned to four study groups: nasal constructs (NC), articular constructs (AC), cell free scaffolds (CFS), and negative control (CTR). All animals underwent two surgical procedures. During the first procedure, chondral defects 4 mm in diameter were created on the weight bearing surfaces of both condyles of the right femur. Biopsy of nasal septum cartilage was also performed. Tissue samples from both sources were further digested and chondrocytes isolated. Cells were then seeded on bilayered scaffolds and cultured. After six weeks, all chondral defects were converted to osteochondral defects 6 mm in diameter and 5 mm deep. In groups NC (n=2) and AC (n=2) autologous grafts engineered in perfusion bioreactor from scaffolds and nasal septum chondrocytes or articular chondrocytes respectively were implanted in the defect. In the CFS group (n=2) scaffolds were implanted while CTR group (n=2) underwent defect conversion only (negative control). Three months after treatment surgery, all sheep were sacrificed and osteochondral tissue blocks were obtained. Before further histological and molecular analysis, all samples were scanned with 1076 SkyScan microCT scanner to quantify trabecular bone volume, trabecular number, and thickness. Explanted bone samples were scanned at 50kV/200µA which corresponds to an 18µm spatial resolution throughout 198° with a 0.6° rotation step. Trabecular bone was assessed by CTAn software (Skyscan). Parameters of trabecular bone volume (BV/TV), trabecular number (Tb.N), thickness (Tb.Th) and separation (Tb.Sp) were calculated.

Overall results showed similar results of subchondral bone restoration in all groups.

The research leading to these results has received funding from the European Union's Seventh Framework Programme (FP7/2007-2013) under grant agreement n°278807 and Horizon 2020....

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P15 - RARE FOOT INJURY IN A FOOTBALL PLAYER

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Great toe dislocations usually occur at the metatarsophalangeal joint owing to its greater mobility and longer lever arm. There are only a few cases of IP joint dislocation reported in the literature and most are dorsal dislocations resulting from hyperextension injuries. Closed reduction is often unsuccessful because of interposition of the volar plate or sesamoids within the joint space.

We present the case of a 18 year old male athlete who sustained an one irreducible hallux IP joint dislocation while playing football.

The patient presented to our emergency department minutes after sustaining the injury.

Physical examination showed an elongated and hyperextended great toe, with decreased range of motion. The medial condylar surface of the proximal phalanx was protruding through a 2 cm volar wound. Attempts at closed reduction were unsuccessful and the patient was taken to the operating room where thorough inspection of the IP joint revealed the volar plate with its sesamoid bone over the proximal phalangeal head. After surgical relocation of the volar plate, the joint was stable, with full range of motion. The volar plate was repaired and a Kirschner wire was placed from the distal phalanx through the proximal phalanx to immobilize the joint and provide stability for the volar plate during healing. The wire was removed 4 weeks after the injury.

The patient was allowed unrestrained sporting activity by the 12th post-operative week. At the final clinical evaluation the patient was pain-free with symmetrical range of motion and was very satisfied with the treatment outcome.

Although irreducible dislocations of the IP joint of the great toe are very rare, they can be the result of even minor sports-related trauma. Prompt treatment with open reduction and K-wire fixation can be very successful and a good outcome is to be expected.

P16 - RARE SYMPTOMATIC INFRA-PATELLAR FAT PAD CYST: A CASE REPORT

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Infra-patellar fat pad is one of the fat pads of the knee. Infra-patellar fat pad cysts are present in 1 to 3 per 1000 MRI. Arthroscopically, it can be difficult to distinguish between a cyst that enlarges until the meniscus and a cyst arising from the meniscus that invades the Hoffa's fat pad. Treatment is indicated if the cyst is symptomatic. It is reported a case of a young girl with a 12 weeks history of anterior knee pain that worsened after a knee strain in a football game, associated with a painful mass in the antero-lateral aspect of the affected knee. Plain radiographs were negative. Ultrasound revealed a septed and multiloculated cyst and MRI revealed a bulky polilobulated cystic formation with thin septa located in Hoffa fat pad, which measured 53x39mm, benign aspect, with thin neck that extended to the anterior aspect of the anterior cruciate ligament and the anterior roots of the meniscus, questioning whether a ganglionic/synovial nature. This swelling conditioned a slight elevation of the patella and a patellar tendon bulging. Since there was no improvement with conservative treatment, the patient was advised and accepted for arthroscopic debridement and resection. On account of the arthroscopically unresectable dimensions of the lesion it was held an open arthrotomy and its complete resection. Histological examination confirmed the suspected diagnosis: infra-patellar fat pad cyst. After one-year follow-up, she totally recovered from initial pain, and fully returned to her previously sports activity. Differential diagnoses of tumoral lesions of the anterior knee are synovial sarcoma, pigmented hypointense or isointense T1 weighted and hyperintense at T2 weighted images. There are several treatment options that include ultrasound guided aspiration, arthroscopic resection and open excision that is reserved for large cysts. There are no reports of recurrence of infra-patellar fat pad cysts, and whatever treatment is performed there is an immediate relief of symptoms.

P17 - SURGICAL COMPLICATIONS IN RHEUMATIC PATIENTS TREATED WITH BIOLOGICAL THERAPY

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Background: Biologic therapy plays an important role in the control of rheumatic diseases, but due to immunosuppression brings the risk of infections. TNF-alpha inhibitors are associated with an increased risk of serious skin and soft tissue infections. Croatian guidelines for biological therapy in the perioperative period advise to discontinue biologics one interval of their application before surgery.

Objectives: To establish surgical complications in patients treated with biologics at Division of rheumatology at Clinical Hospital Centre Rijeka, 2006-2015. year.

Methods: A retrospective study from 2006-2015. included 115 patients. We analyzed the type of disease, age, disease duration, complications, type of biological therapy, concomitant treatment with glucocorticoids and DMARDs.

Results: Out of 115 patients (42% M, 58% F), 55% RA, 27% AS, 14% PsA, 4% JIA, 8,6% patient had orthopedic surgery, mostly total hip and knee arthroplasty (10), 2 operations of cervical and lumbosacral spine, 1 ankle arthrodesis, and 2 infective arthritis, one of them Salmonella enterica infection of total knee arthroplasty. Most patients had RA (7RA, 1JIA, 2AS), 9 female, median age 52 (37-81), average disease duration 14 years (5-21), treated with TNF alfa inhibitors and tocilizumab with concomitant DMARD therapy, and low dose glucocorticoid. We didn't have serious infection as complication of surgery but surprising infection with salmonella.

Conclusions: The incidence of infection is low when we follow the guidelines for stopping biologicals before surgery. Salmonella infection related to the use of TNF alfa inhibitors is described in literature and until today well known.

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P18 - PECTORALIS MAJOR TENDON RUPTURE: DIAGNOSIS AND MANAGEMENT

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Introduction

Pectoralis major tendon rupture is a rare shoulder injury, most commonly seen in bodybuilding and weight lifters.

The objectives of this study were to perform a systematic review about the pertinent anatomy, the mechanisms by which the injury commonly occurs, the examination findings including diagnostic workup, and a summary of the nonoperative and operative treatment options. The authors also report a case of a male bodybuilding athlete, with a left pectoralis major tendon rupture.

Methods

A systematic review was performed in databases of Medline, Scimedirect, Embase, Cochrane review, until April 2016. Were included articles that addressed the subject pectoralis major tendon rupture.

Results

The most frequent activity in which pectoralis major injury occurs is during the bench press maneuver, but the muscle is at risk when the arm is extended and externally rotated while under maximal contraction.

The most common physical examination findings are pain, swelling and ecchymosis in the affected region. A more specific sign is a loss or thinning of the anterior axillary fold.

The most common type of rupture is a distal avulsion of the tendon from its insertion at the humerus. Less common rupture sites are at the musculotendinous junction, the tendon substance itself, and the muscle belly.

Nonoperative treatment is generally reserved for elderly patients, suspected partial or muscle belly ruptures, and for other lower demand patients. It consists of immobilization, analgesics, ice, and physiotherapy.

Surgery is indicated in all young, active patients, regardless of the chronicity of the injury. Tears of the tendon or musculotendinous junction can be sutured directly while tendinous avulsion can be repaired by anatomic reattachment.

Conclusion

Injuries to the pectoralis major muscle are rare but result in pain, weakness, and deformity of the upper extremity. The knowledge about this condition is important for guide the treatment decision which is mostly surgical.