Introduction/objectives: The purpose of this study was to evaluate the function and the quality of life of patients undergoing revision total hip arthroplasty for aseptic loosening.

Methods: 122 patients (130 hips) underun revision total hip arthroplasty. Mean follow up was 9.1 years (sd 3.7) (range 2-16). Mean BMI of the patients was 27.3 (3.8). Modified Wagner stem was used for the femoral revision while biocompatible tantalum cup was used for the cup revision. Extended trochanteric osteotomy was utilized in 73 cases. Patients evaluated with walking speed test, timed up and go test. Patient's function was assessed with the Harris hip score. UCLA activity score. Parker mobility score, lower extremity function score, and with PROMs like Oxford hip score, WOMAC and HOOS. SF12 and EQ-5D-5L, was used for evaluating quality of life. Patient's satisfaction was also recorded.

Results: At the final follow up, 64% of the patients had no pain, Parker mobility score was 8.9 (range 2-9.9, sd 2) and the walking speed test was 1.15 m/s (sd 0.45). Timed up and go test was 13 sec with range 10.30 sec - 36% of the patients had a score above 13.5 sec. Lower extremity functional (LEFS) score was 48 (sd 17), Harris Hip Score was 85 (sd16), WOMAC score was 86 (sd 13) and the Oxford hip score was 40 (sd 7). The UCLA score had a mean of 5.6, median 6 and range 2 to 8. The physical component score of the SF12 was 44 (sd 10) and the mental component score was 55 (sd 8). Had a score above 13.5 sec. Lower extremity functional (LEFS) score was 48 (sd 17), Harris Hip Score was 85 (sd16), WOMAC score was 86 (sd 13) and the Oxford hip score was 40 (sd 7). The UCLA score had a mean of 5.6, median 6 and range 2 to 8. The physical component score of the SF12 was 44 (sd 10) and the mental component score was 55 (sd 8).

Conclusion: Patients who underwent revision total hip arthroplasty demonstrated satisfactory function and quality of life.

Introduction/objectives: The volume of arthroplasties performed per year in each hospital could be an influential factor on its outcome. The objective is to evaluate if there are differences in risk according to volume of arthroplasties/year.

Methods: Data of total hip arthroplasties caused by osteoarthritis from the Catalonian Arthroplasty Register (RACat) between 2005 and 2016 was used. The variable volume (low / high) was created according to the cut-off of 50 procedures hospital / year (fixed a priori based on the data).

For select comparable populations in both groups, a propensity score matching was used considering the following variables: sex, age, comorbidity (Elixhauser), year of intervention, type of cementation and type of admission. The procedures hospital / year (fixed a priori based on the data) were included. Statistically significant differences (p <0.05) were observed between the volume groups in all the variables. After the match none remained. The risk of revision was 1.2%, 2.3% and 4.7% at 1, 5 and 10 years in high volume, and 0.9%, 2.3% and 3.7% in low volume respectively. The volume of procedures was related to the risk of revision: high volume vs low SHR 1.25 (1.02-1.54).

Conclusion: Unlike previous studies in other contexts, the high volume of arthroplasties/year was associated with a greater risk of revision. Future studies considering other variables such as the surgeon's experience or the type of hospital can help to improve the quality of care.
Introduction/objectives: Diagnosis of periarticular joint infection (PJU) is challenging. Several studies showed a role of the long pentraxin PTX3 as a biomarker in inflammatory diseases and infections. We evaluated the diagnostic ability of synovial fluid and serum PTX3 for the infection of total hip arthroplasty (THA) and total knee arthroplasty (TKA).

Methods: Consecutive patients undergoing revision surgery for painful THA or TKA were enrolled. Patients under antibiotic therapy and patients eligible for spacer removal and prosthesis re-implantation were excluded. Quantitative assessment of synovial fluid and serum PTX3 was performed with EUSA. Musculoskeletal Infection Society (MSIS) criteria were used as reference standard for diagnosis of PJU. Receiver operating characteristic (ROC) curve analysis was performed to assess the ability of serum and synovial fluid PTX3 concentration to determine the presence of PJU.

Results: One hundred-fifteen patients underwent revision of THA (n=99) or TKA (n=16). According to MSIS criteria, 18 cases were septic revisions. The average synovial fluid concentration of PTX3 was significantly higher in patients with PJU compared to patients undergoing aseptic revision (23.4 ng/mL versus 3.71 ng/mL; P=0.002). There was no significant difference in terms of serum concentration of PTX3 between the two groups. Synovial fluid PTX3 demonstrated an area under the curve of 0.96 (95%-CI: 0.88-0.98) with sensitivity 94%, specificity 90%, positive and negative predictive values of 67% and 100% for a threshold value of 4.5 ng/mL.

Conclusion: Synovial PTX3 demonstrated a strong diagnostic ability for PJU, and it could be a useful biomarker for detection of PJU in patients undergoing revision surgery for painful THA or TKA.

AW1 Award Abstracts session 1

AW1-248
PTX3 AS A NEW BIOMARKER FOR THE DIAGNOSIS OF PERIPROSTHETIC JOINT INFECTION: A SINGLE-CENTER PILOT STUDY.
Leponti, M. 1,2; Traverso, F. 1,2; Agnini, R. 1,2; Leone, R. 1,2; Bottaci, B. 1,2, Mantovani, A. 1,2; Grappinetti, G. 1,2
1 Humanitas University, Humanitas Clinical and Research Center, Milan, Italy; 2 Humanitas Clinical and Research Center, Milan, Italy.

Introduction/objectives: Different adhesive potentials among bacteria may play a major role on infection's inception. In this in-vitro research, we evaluated the ability of S. aureus, S. epidermidis ATCC 35984, E. coli ATCC 25922 and P. aeruginosa to adhere to the surface of a cobalt-chromium metal head, a fourth-generation ceramic head, a fourth-generation ceramic insert, a highly-crosslinked polyethylene insert and a titanium porous-coated acetabular component. After an initial washing step, bacterial separation from the surface of each specimen was done with a vortex agitator. The colony-forming units were counted to determine the number of viable adherent bacteria. We found no differences on global bacterial adhesion between the different surfaces. E. coli presented the least adhesion potential of four biofilm-producing bacteria usually detected in infected THAs.

Ceramic bearings appeared not to be related to a lower bacterial adhesion than other biomaterials. However, antibiotic therapy and patients eligible for spacer removal and prosthesis re-implantation were excluded. Quantitative assessment of synovial fluid and serum PTX3 was performed with EUSA. Musculoskeletal Infection Society (MSIS) criteria were used as reference standard for diagnosis of PJU. Receiver operating characteristic (ROC) curve analysis was performed to assess the ability of serum and synovial fluid PTX3 concentration to determine the presence of PJU.

Conclusion: Synovial PTX3 demonstrated a strong diagnostic ability for PJU, and it could be a useful biomarker for detection of PJU in patients undergoing revision surgery for painful THA or TKA.

AW1-386
SELF-MANAGEMENT VERSUS USUAL CARE PHYSICAL THERAPY AFTER HIP-ARTHROSCOPY. A RANDOMIZED CONTROLLED TRAIL.
de Visser, E. 1,2,3; Caruisa Wilhelmina Ziekenhuis, Nijmegen, Netherlands.

Introduction/objectives: Femoroacetabular impingement can be treated by hip-arthroscopy. It is unclear what the postoperative rehabilitation of hip-arthroscopy should like. We developed a rehabilitation protocol supervised by a physical therapist which showed good clinical results. However, it is unknown if rehabilitation based on self-management leads to similar results. The aims of this study firstly are to determine feasibility and acceptability of the self-management intervention. Secondly to obtain a preliminary estimate of the difference in effect between self-management versus usual care physical therapy.

Methods: 30 participants scheduled are included and randomized after surgery into a self-management (SM) group and a usual care (UC) group. Both programs take 14 weeks. The SM group performed a home-based exercise program three times a week and received physical therapy treatment once every two weeks. The UC group received treatment two times a week, with additional home-based exercises. Assessment was pre-operatively, at 6, 14, 26 and 52 weeks by ROM, HOAT and single leg squat test (SLS).

Results: 15 participants were included in each group. Preliminary data analysis showed that mean IHOT improved 58 pre-operative to 62 post-operative. The same was seen in ROM and SLST. The exact data will be analysed and available at the time of presentation because the study finishes in June 2018.

Conclusion: Self-management after hip-arthroscopy is feasible and accepted by the patient group. Although the results are preliminary, we cannot find a difference in improvement between the SM and UC group as measured by IHOT, Range of motion and Single leg squatting.

AW2 Award Abstracts session 2

AW2-198
BAD PRESS EQUALS BAD PROMS?
van der Wier, M. 1,2; Nijman, T. M. 1,2; Barentregt, L. D.J. 1,2; Scholtes, V. A.B. 1,2; P. van der Walt, S. 1,2; Postman, R. W. 1,2
1 OLVG, Department of Orthopaedic surgery, Amsterdam, Netherlands; 2 University of Amsterdam, Department of Psychology, Amsterdam, Netherlands.

Introduction/objectives: As of 2010 concerns were raised about the safety of Metal on Metal (MoMHRA) implants in both orthopaedic and public media. We aimed to gain insight in the potential influence of negative publicity on PROMs in patients who received MoM hip resurfacing arthroplasty (MoMHRA).

Methods: A cross-sectional study carried out in 2014 among 251 patients who received MoMHRA between May 2004 and January 2012. They answered questions about sources of information on their implant, the type of information (positive/negative) and their concern about complications, as well as the Hip disability and Osteoarthritis Outcome Score (HOOS) and the RAND-36. Regression analysis was used to test the relationship between level of concern and the PROMs.

Results: The top three MoMHRA information sources consisted of public media with the orthopaedic surgeon coming fourth. The majority had heard only negative information in the media (53%) or both negative and positive (34%). Of all patients, 19% had no concern about complications, 39% a little, 26% quite a bit and 16% very. Patients scored worse on the HOOS as level of concern increased compared to no concern: a little -7.4 (95% CI -1.46;-7.5), quite a bit -16.5 (95% CI -10.2;-22.9) and very -22.0 (95% CI -14.9;-29.05). Patients who were very concerned also had a lower score on the physical component scale of the RAND-36 compared to no concern (-7.5, 95% CI -3.2;-7.5).

Conclusion: Public media are the major sources of information on MoMHRA. Most patients are concerned about complications and they score progressively worse on the HOOS as their level of concern increases. Further research is needed to investigate if there is a causal relationship between media coverage, concern and patient reported outcomes.

AW2 Award Abstracts session 2

AW2-29
IS CERAMIC RELATED TO A LOWER BACTERIAL ADHESION THAN OTHER BIOMATERIALS? AN IN-VITRO ANALYSIS.
Suñé, P. 1,2,3; Greco, G. 1,2; Buttaro, M. 1,2; Mc Loughlin, S. 1,2; Oñativia, J. 1,2; Garcia Arvia, C. 1,2; Comba, F. 1,2; Picaluga, F. 1,2; 1 Italian Hospital of Buenos Aires, Buenos Aires, Argentina.

Introduction/objectives: Although there is some clinical evidence of ceramic bearings being associated with a lower infection rate after total hip arthroplasty (THA), available data remains controversial since this surface is usually reserved for young, healthy patients. Therefore, we investigated the influence of five commonly-used biomaterials on the adhesion potential of four biofilm-producing bacteria usually detected in infected THAs.

Methods: In this in-vitro research, we evaluated the ability of S. aureus, S. epidermidis ATCC 35984, E. coli ATCC 29522 and P. aeruginosa to adhere to the surface of a cobalt-chromium metal head, a fourth-generation ceramic head, a fourth-generation ceramic insert, a highly-crosslinked polyethylene insert and a titanium porous-coated acetabular component. After an initial washing step, bacterial separation from the surface of each specimen was done with a vortex agitator. The colony-forming units were counted to determine the number of viable adherent bacteria.

Results: We found no differences on global bacterial adhesion between the different surfaces. E. coli presented the least adhesion potential among the analysed pathogens (p<0.001). The combination of E. coli and S. epidermidis generated an antagonistic effect over the adhesion potential of S. epidermidis individually (0.04% vs. 4.61%, p<0.001). The combination of P. aeruginosa and S. aureus presented a trend to an increased adhesion of P. aeruginosa independently, suggesting an agonist effect (7% vs. 42%, p<0.07).

Conclusion: Ceramic bearings appeared not to be related to a lower bacterial adhesion than other biomaterials. However, different adhesive potentials among bacteria may play a major role on infection's inception.
AW2 Award Abstracts session 2

AW2-407
CONVERSION OF HIP FUSION TO TOTAL HIP ARTHROPLASTY THROUGH DIRECT ANTERIOR APPROACH
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(1) Tehran University of Medical Science, Tehran, Iran, Islamic Republic of

Introduction/Objectives: Technical difficulties make conversion to total hip arthroplasty (THA) from a fused hip a challenging procedure with mixed results. Here we report our surgical technique and early results of conversion of fused hips to THA via direct anterior approach (DAA).

Methods: Between 2013 and 2017 we performed 15 conversions to THA in 13 patients with hip fusions through DAA. The procedure was performed on a standard table, in supine position, and with or without fluoroscopy guidance. Patients were followed up for a mean of 3 years. The clinical and radiological outcomes of this approach are reported in this study.

Results: There were 9 men and 6 women with a mean age of 45 years old. The mean time interval between fusion and THA was 26 years. The mean follow-up period was 3 years. All available components were in situ zone. There was one recurrent dislocation due to adductor insufficiency. Harris Hip Score and WOMAC score were significantly improved in all patients.

Conclusion: The DAA is a safe and efficient approach for conversion of fused hips to THA with benefits of having better landmarks and possibility of utilizing intraoperative fluoroscopy.

AW2-410
NO MEASURABLE LEARNING CURVE OF THE INTRODUCTION OF THE DIRECT SUPERIOR APPROACH IN TOTAL HIP ARTHROPLASTY
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(1) Amphia Hospital, Breda, Netherlands; (2) Amphia Hospital, Orthopedics, Breda, Netherlands; (3) Amphia Hospital Breda, Dep. Orthopedic Surgery, Breda, Netherlands; (4) Amphia Hospital, Department of Orthopedics, Breda, Netherlands

Introduction/Objectives: The direct superior approach (DSA) is a new tissue sparing approach for total hip arthroplasty (THA) by sparing the iliotibial band. The objective of this study was to determine the learning curve of the DSA compared to the mire postero-anterior approach (MPA).

Methods: A prospective cohort study was performed including our first 52 DSA cases and as control group, 52 MPA patients matched on age, body mass index (BMI) and ASA classification. Only patients with primary osteoarthritis or osteonecrosis and BMI < 35 were included. We measured the outcome of surgical time, blood loss, postoperative pain, length of stay, implant position, use of walking aids and 6 weeks postoperatively, patient reported outcome measures (PROMs) at 3 months and 90 days complications. Unpaired t-tests were used to analyse differences between the DSA and the MPA group for continuous variables and Chi-square tests for categorical variables. Two-way repeated measures ANOVA was used to analyse pain scores and PROMS between the DSA and the MPA-group.

Results: The mean surgical time of 61 min (SD 8) in the DSA group was longer (P<0.001) compared to 46 min (SD 12) in the MPA group. No differences were found in blood loss, postoperative pain, length of stay and walking ability. Available cup and femoral stem position were not compromised by the DSA. PROMS and complication rate showed no differences between the MPA and the DSA group.

Conclusion: The DSA can be introduced safely without a measurable learning curve and without an increase in complications. Only a slight increase in operation time is expected in the early experience.
**O01 Primary THA 1**

**O01-145**

**THE NEED FOR PATIENT-SPECIFIC “SAFE ZONES” IN TOTAL HIP ARTHROPLASTY**

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NYU Langone Orthopedic Hospital, New York, United States

**Introduction/objectives:** The purpose of this study was to compare pre-operative acetabular cup parameters using this novel dynamic imaging sequence to the Lewinnek safe zone.

**Methods:** We retrospectively reviewed 350 consecutive primary THAs that underwent dynamic pre-operative acetabular cup planning utilizing a pre-operative CT scan to capture the individual’s hip anatomy, followed by standing (posterior pelvic tilt; splaying anterior pelvic tilt; and supra X-rays. Using these inputs, we modelled an optimal cup position for each patient. Radiographic parameters including inclination, anteversion, pelvic tilt, pelvic incidence, and femoral offset were analyzed.

**Results:** Mean age of patients was 63 years (range, 18 to 95). Mean supra pelvic tilt was 4.7° (range, 31° to 21°), standing pelvic tilt was 0.3° (range, 33° to 23°), and flex-sit pelvic tilt was 0.7° (range, 42° to 35°). Mean pelvic incidence was 45° (range, 34 to 49) and mean anteversion was 24° (range, 3.5 to 39). Only 50% of the dynamically planned cups were within the Lewinnek safe zone (p<0.05, Figure 1). Mean inclination and anteversion difference between dynamic and Lewinnek safe zone was 1.3° (range, 0° to 12°) and 8.9° (range, 0° to 25°), respectively.

**Conclusion:** Our study demonstrates that historical target parameters for cup inclination and anteversion significantly differ to target values obtained with the use of functional imaging. Understanding the individual spinopelvic motion for each patient allows for more accurate placement of the acetabular component, which may help to reduce the risk of dislocation, premature wear and squeaking of bearing surfaces, and improve functional outcomes.

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**O01 Primary THA 1**

**001-313**

**INTRODUCTORY CALCIFIC FRACTURES ARE ASSOCIATED WITH THE CLS SPOTORNO CEMENTLESS STEM DESIGN: BOTH THE SURGEON AND IMPLANT FACTOR ARE INVOLVED**

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**Introduction/objectives:** This study reports on the incidence of intraoperative calcific fractures with the Cementless Sporono (CLS) stem and correlated the incidence with learning curve and geometrical implant positioning.

**Methods:** After introduction of the CLS hip design, 800 consecutive cementless Total Hip Arthroplasties (THA) were analysed. The incidence of calcific fracture in the first 400 THA was compared with the second 400 THA, in order to study a potential learning curve effect. According to the Instruction For Use (IFU), varus positioning of the stem was avoided and a femoral neck cut was aimed relatively close to the lesser trochantier since these are assumed to be correlated with calcific fractures. Radiographic geometric analysis of implant positioning (neck shaft angle, femoral offset and acetabular-lower trochantier distance) was performed on all THA with calcific fractures and 100 randomly selected uncomplicated cases.

**Results:** Seventeen (2.1%) intraoperative calcific fractures were recorded. The incidence of calcific fracture differed between the first (n=11) and the second cohort (n=6). This difference was not statistically significant (p=0.220), however these numbers indicate a trend towards a learning effect. No correlation was established for stem positioning or the height of the femoral neck cut.

**Conclusion:** Intraoperative calcific fractures are associated with the use of the CLS stem design. A learning curve may play a role; however, the risk for calcific fractures remains clinically significant even after adequate implant positioning in the hands of experienced hip surgeons. Surgeons should be aware of this implant related phenomenon and be alert on this phenomenon intra-operatively.

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**O01 Primary THA 1**

**001-388**

**EARLY CLINICAL OUTCOMES OF A TAPERED WEDGE FEMORAL STEM**

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**Introduction/objectives:** Wedge femoral stems used in total hip arthroplasty (THA) have evolved with modifications including shorter lengths, reduced diaphyseal geometries, and modular necks. Unlike femoral stems which contact most of the metaphysis, wedge femoral stems are designed to achieve proximal medial/lateral fixation. The tapered wedge geometry of the cementless proximal metaphyseal canal for all femur types (Dorn A, B, C). The objective of this study was to evaluate the early clinical outcomes of a tapered wedge femoral stem.

**Methods:** Fifty subjects (28M, 22F; age: 64.7±9.2; BMI: 29.6±4.6) underwent primary THA prospectively with a tapered wedge femoral stem. Clinical outcomes for this IRB approved study included the Harris Hip Score (HHS), the Oxford Hip Score (OHS), revision, and subsidence. All subjects signed the informed consent. Student t-tests were used to identify significant mean differences (p<0.05).

**Results:** For subjects returning for the 2 year post-op visit (n=39), the HHS improved by 40.8 points to 92.0 from 51.2 and the OHS improved by 23.5 points to 44.6 from 21.1. There was no significant difference between genders with regard to age, BMI, or HHS scores. However, females had significantly lower pre-op and 3 month OHS scores (18.2 vs 24.3; 40.3 vs 45.7). There were no revisions. There were no observations of subsidence at 1 (n=45) or 2 years (n=47).

**Conclusion:** The tapered wedge femoral stem exhibited positive early clinical results as demonstrated by the marked improvement in functional outcome scores from the pre-op visit to 2-years post-op with no reports of subsidence or revisions. This tapered wedge stem design is a promising alternative to conventional femoral stems.
Introduction/objectives: There is no clear evidence if cemented or uncemented hip stem designs are preferable for older patients. This RSA study investigates stability and function of the cemented and uncemented porous coated Taperloc hip stems in older patients.

Methods: 32 patients of 66-75 years of age (23 total hip replacements) were prospectively randomized to receive a cemented or uncemented porous coated Taperloc stem (N=18,15). Implant stability was evaluated with RSA and implant function was assessed with HHS and PROMs. Follow-up moments were preoperatively, directly postoperative (no PRA), and at 6, 3 and 6 months and 1, 2, and 5 years postoperatively. A Linear Mixed effect Model (LMM) analysis was performed for statistical analysis.

Results: Maximum mean subsidence was 0.30 and 1.17 mm for the cemented and uncemented stems respectively. Implant stability was obtained between 3 and 6 months. HHS increased from 58 to 95 and from 58 to 96 for cemented and from 58 to 96 for uncemented stems. In both groups HHS and PROMs showed significant improvement in function and pain within 6 months and 3 months respectively. Despite the large difference in maximum subsidence in both groups, the LMM analysis showed no differences for stability and function between the cemented and uncemented porous coated hip stems. No stems were revised during follow-up.

Conclusion: Based on the 5 year results of this PCT RSA study there is no difference in stability and function of the cemented and uncemented porous coated Taperloc stems in patients of 66-75 years of age.

O01 Primary THA 1

O01-274
5 YEAR STABILITY OF THE CEMENTED AND UNCEMENTED POROUS COATED TAPERLOC STEM, A RHEOTIMED

PHOTOGRAMMETRIC ANALYSIS (RSA) STUDY

Van Rest, K.*; Keizer, S.; Zimmerer, A.*; Höltzermann, M.; Keizer, S.; Miehlke, W.; Thier, S.*; Oda, K.*; Yasui, K.²; Zimmerer, A.*; Haaglanden Medisch Centrum - Bronovo, Leiden University Medical Centre, Den Haag, Netherlands; ²Leiden University Medical Centre, Orthopedic Department, Leiden, Netherlands

Introduction/objectives: There is no clear evidence if cemented or uncemented hip stem designs are preferable for older patients. This RSA study investigates stability and function of the cemented and uncemented porous coated Taperloc hip stems in older patients.

Methods: 32 patients of 66-75 years of age (23 total hip replacements) were prospectively randomized to receive a cemented or uncemented porous coated Taperloc stem (N=18,15). Implant stability was evaluated with RSA and implant function was assessed with HHS and PROMs. Follow-up moments were preoperatively, directly postoperative (no PRA), and at 6, 3 and 6 months and 1, 2, and 5 years postoperatively. A Linear Mixed effect Model (LMM) analysis was performed for statistical analysis.

Results: Maximum mean subsidence was 0.30 and 1.17 mm for the cemented and uncemented stems respectively. Implant stability was obtained between 3 and 6 months. HHS increased from 58 to 95 and from 58 to 96 for cemented and from 58 to 96 for uncemented stems. In both groups HHS and PROMs showed significant improvement in function and pain within 6 months and 3 months respectively. Despite the large difference in maximum subsidence in both groups, the LMM analysis showed no differences for stability and function between the cemented and uncemented porous coated hip stems. No stems were revised during follow-up.

Conclusion: Based on the 5 year results of this PCT RSA study there is no difference in stability and function of the cemented and uncemented porous coated Taperloc stems in patients of 66-75 years of age.

O01 Primary THA 1

O01-25
PRIOR ARTHROSCOPIC TREATMENT FOR FEMOROACETABULAR IMPINGEMENT DOES NOT COMPROMISE HIP

ARTHROPLASTY OUTCOMES: A MATCH-CONTROLLED STUDY

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Introduction/objectives: Femoroacetabular Impingement (FAI) is known as a predisposing factor in the development of osteoarthritis of the hip. In order to treat this condition hip arthroscopy is considered as the gold standard in nowadays. The number of performed hip arthroscopies has risen immensely in recent years. However, a number of patients will require further surgical intervention up to total hip replacement (THR) at a later stage. The purpose of this study was to analyze whether outcomes of THR are affected by prior hip arthroscopy.

Methods: Patients who underwent a THR following an isolated hip arthroscopy were matched to a control group of THR patients with no history of ipsilateral hip surgery. Matching criteria were age, sex, body mass index, implants used and surgical approach. Modified Harris Hip Score, surgical time, presence of heterotopic ossification and postoperative complication were prospectively compared at minimum 2-year follow-up.

Results: Thirty-three THR after arthroscopy patients were successfully matched to control patients. There was no significant difference in mean mHHS between both groups (FAI treatment group 92.8 vs. control group 93.8, p=0.07). However FAI treatment group showed a lower mHHS score preoperatively (48 vs 60, p = 0.02). There was no significant difference in surgical time and postoperative complication rate. No heterotopic ossification could be found.

Conclusion: A prior hip arthroscopy has no effect to clinical outcomes of subsequent THR.

O02 Hip preserving surgery 1

O02-117
PREVALENCE OF CAM AND PINCER DEFORMITIES IN ASYMPTOMATIC INDIVIDUALS

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Introduction/objectives: In clinical practice, the presence of radiological signs of femoroacetabular impingement (FAI) is not necessarily associated with symptoms. Hence, the prevalence of cam and pincer deformities in the overall population may be underestimated. The purpose of this study was to screen an unselected cohort of people without hip symptoms for native radiological signs of cam and pincer FAI to determine their actual prevalence.

Methods: 110 asymptomatic patients with no prior history of hip pain were included in this retrospective study. All of the patients had AP pelvis x-rays and cross-table hip x-rays in internal rotation performed. We evaluated the images for the presence of cross-over signs and measured lateral center edge angles, alpha angles, and femoral offset ratios.

Results: Positive cross-over signs were seen in 34%, LCE angles >40° in 13%, and femoral offset ratios <0.18. In 43%, in 41% of the patients, alpha angles were >50° and in 25%, alpha angles were >50°. Male patients showed significantly higher alpha angles, lower offset ratios, and a higher prevalence of cross-over signs. In contrast, female patients had significantly higher lateral center edge angles. Overall, 71.9% of the patients had at least one radiological sign of FAI on plain hip x-rays.

Conclusion: According to our data, radiological signs of cam and pincer FAI are common in asymptomatic people. Therefore, in clinical practice, patients presenting with hip pain and native radiological signs of FAI should undergo further diagnostic evaluation. However, in asymptomatic patients with radiological signs of FAI, no further evaluation is recommended.
**002 Hip preserving surgery 1**

**002-98**

**DEROTATIONAL FEMORAL OSTEOTOMIES FOR POSTERIOR EXTRAARTICULAR ISCHIOFEMORAL HIP IMPINGEMENT REDUCE ANTERIOR AND POSTERIOR FEMORAL SHAFT ANGLE**

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**Introduction/objectives:** Posterior extraarticular ischiofemoral hip impingement can be caused by high femoral torsion and is typically located between the ischium and the lesser trochanter.

**Objectives:** To assess (1) hip pain and function, (2) subsequent surgeries and complications and (3) PROMs in patients undergoing derotational femoral osteotomies at minimum 1-year follow-up.

**Methods:** We evaluated 35 hips undergoing derotational femoral osteotomies between 2005 and 2016 retrospectively. Mean follow-up was 2.6 years and 94% were female. 19 hips with a cam-type FAI underwent offset improvement to avoid anterior intraarticular impingement. 18 hips underwent derotational femoral osteotomies combined with variation (neck-shaft angle >139°), indication for derotational osteotomies was a positive posterior impingement test in extension and external rotation, high femoral torsion (mean 46° ± 7°) on CT scans and decreased external rotation (mean 16° ± 13°).

**Results:** At minimum 1-year follow-up (1) the positive posterior and anterior impingement test decreased from preoperatively 100% to 3% (p < 0.001) and from preoperatively 97% to 18% (p < 0.001). The mean Merle d’Aubigné Hip Score increased from 14 (11-16) to 16 (13-17) at latest follow-up (p < 0.001).

(2) At 1-year follow-up 32 hips had been preserved and one hip had been converted to THA. (3) In two hips (6%) revision osteosynthesis was performed for delayed healing of the femoral osteotomy.

**Conclusion:** Derotational femoral osteotomies with and without offset improvement and variation for posterior extraarticular ischiofemoral hip impingement caused by high femoral torsion result in decreased hip pain at midterm follow-up but had 0% delayed healing rate requiring revision surgery.

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**002-123**

**ACETABULAR CHONDROALGEAS ASSOCIATED WITH FEMORACETABULAR IMPINGEMENT TREATED BY AUTOLOGOUS MATRIX-INDUCED CHONDROGENESIS OR MICROFRACTURE: A COMPARATIVE STUDY AT 8-YEAR FOLLOW-UP**

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**Introduction/objectives:** Acetabular chondral lesions require specific treatment in addition to that of FAI. In this single-center retrospective analysis of a consecutive series of patients, we compared microfracture (MFx) with autologous matrix-induced chondrogenesis (AMIC) treatment outcomes.

**Methods:** Acetabular grade III and IV chondral lesions measuring between 2 cm² and 8 cm² in 109 patients were treated either by MFx in 50 or by AMIC in 59 hips. Outcomes were assessed using the modified Harris Hip Score until 8 years post-operatively.

**Results:** The pre-operative mHHS was significantly lower in the AMIC group (p = 0.006). The mean mHHS improved significantly in both groups six months post-operatively (77.04 for MFx and 79.8 for AMIC p < 0.001). The mean improvement of mHHS at 6 months was 30-34 points versus preoperative values. At this time there were no better results with neither MFx nor AMIC compared to the preoperative values. At the 8-year follow-up both groups showed significant improvements of the mHHS. However, the final results were not significantly different between both groups. The final mHHS in the MFx group was 88.02 ± 19.21 and in the AMIC group 87.16 ± 22.14.

**Conclusion:** Both MFx and AMIC techniques led to marked clinical short-term improvement. AMIC gave significantly better results up to 8 years post-operatively. 11 patients (22%) required THA in the MFx group, compared with none in the AMIC group.

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**002 Hip preserving surgery 1**

**002-45**

**HIP ARTHROSCOPY COMPARED TO BEST CONSERVATIVE CARE FOR THE TREATMENT OF FEMOROACETABULAR IMPINGEMENT SYNDROME: A RANDOMISED CONTROLLED TRIAL (UK FASHION)**


(*): University of Warwick, CSRI, Coventry, United Kingdom; (1): University of Bristol, Bristol, United Kingdom; (2): Keck University, Kevel, United Kingdom

**Introduction/objectives:** Femoroacetabular impingement syndrome (FAI) is a common cause of hip and groin pain in young adults. There is no robust evidence of comparative effectiveness of physiotherapy or surgery. UK FASHION compared the clinical and cost-effectiveness of arthroscopic hip surgery (HA) versus best conservative care.

**Methods:** UK FASHION was a pragmatic, multicentre, 2 parallel arm, superiority, randomised controlled trial in patients with FAI syndrome. Eligible patients were over 16 without radiographic signs of osteoarthritis, deemed suitable for arthroscopic FAI surgery. Participants were randomly allocated to HA or physiotherapy (PHT). The primary outcome measured was hip-related quality of life using the patient-reported International Hip Outcome Tool (HOT-33) at 12 months. Secondary outcomes included EQ-5D, SF-12, adverse events, and cost-effectiveness. Primary analysis compared differences in HOT-33 scores at 12 months by intention to treat.

**Results:** 348 patients were randomised. Time to surgery was 132 days (SD71) versus 47 days (SD52) to PHT. 92.5% were followed-up at 12 months. Baseline mean HOT-33 scores were 38.2 (SD17) and 36.8 (SD18) in the surgery and PHT groups, and at 12 months 58.6 (SD27) and 49.7 (SD9) respectively. Mean scores in both groups improved over 12 months, but the mean HOT-33 score increased more in those allocated to HA than to PHT, with an adjusted mean difference of 6.9 points (95% CI 1.7-12.0 p = 0.009). Mean overall costs were £3713 for HA and £1293 for PHT.

**Conclusion:** Hip arthroscopy and best conservative care both led to improved hip-related quality of life in patients with FAI syndrome. At 12-month follow-up, improvement was greater in those allocated to hip arthroscopy.
Introduction/objectives: Bernese (Ganz) periacetabular osteotomy (PAO) is an accepted treatment for hip dysplasia. In this study, we assessed mid to long-term results of PAO performed for acetabular dysplasia.

Methods: Between 1998-2015, Bernese PAO have been performed in 126 hips (133 patients) by a single surgeon (IRT) with a standard technique. Minimum five years follow-up was evaluated. Merit of Ganz (MA) and Harris Hip Score (HHS) were assessed pre and postoperatively. Pre and postoperative radiographic parameters were measured with Hip2NORM software. Symptomatic patients were obtained. Kaplan-Meier analysis was used to assess survival with an endpoint of total hip arthroplasty (THA).

Results: Mean Follow-up period was 9.8yrs (5.18) yrs. Mean age was 50 (13.48) years. Mean HHS and MA scores were measured 81.4±9.8 and 14.8±1.1, respectively. At the last follow-up both mean scores were higher: 89±±11.1 and 16.5±±1.7, postoperatively. There were significant differences between mean pre- and postoperative values of Anteroin, Cristocaudal Coverage, Lateral Center Edge Angle, Acetabular Index and Ectrusus Index. Pre and post-operative mean Torres scores were 0.9 and 1.2, respectively. 15 hips were symptomatic, Seven of them were undergone THA at a mean of 9.3±3.6 years. Kaplan-Meier analysis revealed a hip survival rate of 91% at ten years.

Conclusion: Bernese PAO is a useful technique to postpone performing total hip arthroplasty in hip dysplasia and did well at a mean of ten years.

Conclusion:

AMIC (AUTOLOGOUS MATRIX INDUCED CHONDROGENESIS) WITH BONE MARROW DERIVED CELL TRANSPLANTATION FOR TREATMENT OF ACETABULAR CARTILAGE LESIONS IN CAM-TYPE FEMOROACETABULAR IMPINGEMENT (FAI)

Somers, J.*
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Introduction/objectives: Autologous Matrix Induced Chondrogenesis/AMIC can improve results of microfracturing. A one step arthroscopic technique based on bone marrow-derived cell transplantation (BMDCT) has shown good results in repairing osteochondral lesions of the talus.

Methods: BMDCT onto a Chondrodegre membrane was performed in 16 hips. The original description of the BMDCT technique had to be modified to allow fixation of the collagen membrane to the acetabulum during the arthroscopic procedure. All patients had cam type FAI for which arthroscopic femoroplasty was performed.

Results: Mean age was 29 years. In 9 hips a lateral raphe had also been performed. Mean follow-up was 17 months. There were no complications or adverse events. Subjective results were rated as excellent in 10 and very good in 6. Mean internal rotation improved from 5° to 28°; flexion and extension normalized in all hips. HHS improved from 63 to 95. UCLA Activity Score improved from 6 to 9. No patient developed significant heterotopic ossification. A flexion angle improved from 81° to 102°, bone edema present on MRI in 3 hips disappeared within 6 months. A relook arthroscopy after one year showed smooth labral-like tissue, well fixed to the underlying bone and labrum. G-E-MRI confirmed normal hyaline cartilage-like signal. Four patients had previously contralateral FAI surgery and AMIC without BMDCT, they all had a faster return to running and sports with AMIC + BMDCT.

Conclusion: Combined arthroscopic AMIC with Chondrodegre and BMDCT is safe and technically feasible in the treatment of medium to large cartilage defects in cam-type FAI, with excellent clinical results in the short term.
Introduction/objectives: Although the cause of dislocation in total hip replacement (THR) is multifactorial, the correct alignment of the components has been described as critical point to avoid it. Combined anteversion (CA) is the sum of cup and stem anteversion. Has been suggest, that the safe zone is between 37 ° ± 10 °.

Methods: IRB-approved retrospective study. Database (2016-2018; 360 hips) was reviewed for patients with AVN and follow-up was 32 months. 30 patients were included (mean age 31 years). 14 hips underwent joint preserving surgery (10 open, 4 arthroscopy). Traction technique included weight-adapted traction (15-23 kg), a supporting splint and closed reduction. Complete radiographs and traction MRA. 30 patients were included (mean age 31 years). 14 hips underwent joint preserving surgery (10 open, 4 arthroscopy). Traction technique included weight-adapted traction (15-23 kg), a supporting splint and closed reduction. Complete radiographs and traction MRA.

Results: 1289 primary THR meet the inclusion criteria. There were 34 dislocation (2.63%). Average age 71.08 years. Mean follow-up was 32 months.

Most dislocated THR (73.5%) had a correct acetabular anteversion. The mean acetabular anteversion was 15.1 ° ± 9.6 °. In addition, 38.2% of the dislocated THR had a correct femoral anteversion. The mean femoral anteversion was 8.4 ° ± 17.2 °. Eventhough 20.3% (12 of 34) of the dislocated THR had a correct combined anteversion. The mean combined anteversion was 21.1 ° ± 16.5 °.

Conclusion: One in three (35.3%) of dislocated hip replacements had a correct combined anteversion.

The dislocation in the THR is multifactorial and although a correct combined anteversion is necessary to avoid the femoro-acetabular impingement, it cannot be considered as a true safe zone.

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O03 Imaging

O03-429

DOES COMBINED ANTEVERSION PREVENT DISLOCATION IN TOTAL HIP REPLACEMENT? Baro, V. 1 ; Nuñez, J. 2 ; Miranda, I. 1 ; Hernandez, A. 1

Introduction/objectives: Although the cause of dislocation in total hip replacement (THR) is multifactorial, the correct alignment of the components can improve visualization of cartilage lesions. Thus we assessed (1) location of necrosis, (2) cartilage damage pattern, (3) prevalence of osseous deformities and (4) prevalence of bone grafting, cartilage repair and correction of associated femoroacetabular impingement. Currently, clinical and radiological variables of patients with diastasis were assessed. The acetabular, femoral and combined anteversion were measured by computed tomography

Methods: Historic cohort study of patients operated on primary THR between 2003 and 2015. The inclusion criteria were: Patients with primary degenerative arthrosis and ages between 55 and 88. Patients with hip dysplasia or neuromuscular diseases were excluded. Clinical and radiological variables of patients with diastasis were assessed. The acetabular, femoral and combined anteversion were assessed radiologically. The CA of 37 ° ± 10 ° was considered as the “safe zone”. Radiographic data were measured by computed tomography.

Results: 1289 primary THR meet the inclusion criteria. There were 34 dislocation (2.63%). Average age 71.08 years. Mean follow-up was 32 months.

Most dislocated THR (73.5%) had a correct acetabular anteversion. The mean acetabular anteversion was 15.1 ° ± 9.6 °. In addition, 38.2% of the dislocated THR had a correct femoral anteversion. The mean femoral anteversion was 8.4 ° ± 17.2 °. Eventhough 20.3% (12 of 34) of the dislocated THR had a correct combined anteversion. The mean combined anteversion was 21.1 ° ± 16.5 °.

Conclusion: One in three (35.3%) of dislocated hip replacements had a correct combined anteversion.

The dislocation in the THR is multifactorial and although a correct combined anteversion is necessary to avoid the femoro-acetabular impingement, it cannot be considered as a true safe zone.

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O03 Imaging

O03-85

ALIGNEMENT VIEW BEFORE TOTAL HIP ARTHROPLASTY IN DYSPLASTIC HIPS CAN FIND SOME CASES FOR DISTAL OSTEOTOMY WITH OR WITHOUT SHORTENING BY NEW MECHANICAL AXES AFTER INSERTING CUP AND STEM, AN IMPORTANT TECHNICAL POINT Baro, V. 1 ; Pendar, E. 2

Introduction/objectives: Total hip arthroplasty is done for destructive joint disorder sequela of diaphysial hips. There may be some cases which has valgus knee. So, we take alignment view before total hip arthroplasty in O2H cases. There were more valga knees specially in crows type 3 and 4 for maintaining mechanical axes balanced before operation. If it is not corrected during process of THR, after inserting cup and stem and emission of proximal femur, valgus alignment may become prominent. So, it is advised that if there is high riding hip which need shortening, it is done in distal part of femur to both correct mechanical axis and also do shortening. In crows type 1 and 2 which may do not need shortening, if there is valgus knee, distal osteotomy without shortening should be done.

Methods: Between 2005 and 2015, there were 154 diaphysial hips which need THR. Alignment view were done for all of them.

Results: There were 6 cases of crows type 1 and 2 that need distal osteotomy to correct knee alignment without any need of shortening.

Conclusion: In pre-operative planning, it is necessary to draw new mechanical axis of limb with new position of cup and stem to calculate position and size of osteotomy of distal femur. If osteotomy done without attention to new mechanical axis after inserting cup and stem, there may be over or under correction of alignment.

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O03 Imaging

O03-160

TRACTION MR ARTHROGRAPHY OF THE HIP FOR CHARACTERIZATION OF AVASCULAR NECROSIS AND FEMORAL CARTILAGE DAMAGE Schmaranzer, E. 1 ; Siegfried, M. 2 ; Lienh, T. 3 ; Colmenn-Balian, J. 4 ; Schmaranzer, E. 3 ; Siebenrock, K. A. 5 ; Tamann, M. 6

Introduction/objectives: In young patients with femoral head necrosis (AVN), surgical hip dislocation or hip arthroscopy offer the possibility of bone grafting, cartilage repair and correction of associated femoroacetabular impingement. Currently, necrosis, cartilage damage pattern and overall joint morphology are unknown in AVN. Traction MR arthrography (MRA) allows visualization of cartilage damage pattern, (2) visualization of bone marrow edema and (3) assessment of the accuracy of traction MRA to detect cartilage lesions (%3) and prevalence of osseous deformities.

Methods: IRB-approved retrospective study. Database (2016-2018; 360 hips) was reviewed for patients with AVN and complete radiographs and traction MRA. 30 patients were included (mean age 31 years). 14 hips underwent joint preserving surgery (9 open, 5 arthroscopy). Traction technique included weight-adapted traction (15-23 kg), a supporting plate to avoid pelvic tilt and radial images for assessment of cam deformities, necrosis, cartilage damage. We assessed (1) necrosis location, (2) femoral cartilage damage pattern on radial MR images, (3) accuracy of traction MRA to detect femoral cartilage lesions compared to surgery, (4) prevalence of cam (~pimer- ~pilipades) hip deformities.

Results: (1) Necrosis was least frequently anteriorly superior (~30 %). (2) Most frequently femoral cartilage delamination was found anteri-superior (~87 %). (3) Sensitivity specificity was 100% of traction MRA to detect femoral cartilage lesions. (4) 49%, 43%, 23% of hips had a cam-, piriform-, dysplastic deformity.

Conclusion: AVN predominantly affects the antero-superior quadrant and leads to corresponding femoral cartilage delamination which can be detected accurately using traction MRA. Prevalence of osseous deformities is high in AVN.

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O03 Imaging

O03-53

THE MANAGEMENT OF ISOLATED GREATER TROCHANTER FRACTURES: IS CROSS-SECTIONAL IMAGING NECESSARY? Thurston, D. 1,2 ; Marson, B. 3,4 ; Jeffery, H. 3,4 ; Olives, B. 3,4 ; Westbrook, T. 1,2 ; Moran, C. 1,2

Introduction/objectives: Isolated fracture of the greater trochanter is an uncommon presentation of hip fracture. Historically, these injuries were managed non-operatively, but modern imaging techniques have made it possible to detect occult intertrochanteric extension in up to 30% of cases. We aimed to review the investigation and management of greater trochanter fractures in our institution.

Methods: A retrospective review was completed of patients admitted with greater trochanter fractures. These were case-matched with 2-part extracapsular fractures. Initial management and clinical outcome was established using electronic notes and radiographs. Mortality and length of stay was calculated for both groups.

Results: 85 isolated greater trochanter fractures in 84 patients identified from 2006-2017. 81/85 patients were treated non-operatively. 79 were mobilised full weight bearing. None required readmission or operation due to fracture displacement. 58 patients had cross-sectional imaging with MRI or CT, and 15 of those scanned had intertrochanteric extension. In the same time period, 998 2-part extracapsular fractures were treated using a sliding hip screw. Length of stay was shorter in patients with greater trochanter fractures than 2-part extracapsular fractures (median 7 days vs 14 days, p = 0.0001). 30-day mortality was 11.9%, with no significant difference to patients with 2-part extracapsular fractures.

Conclusion: Cross-sectional imaging rarely changed treatment protocol for greater trochanter fractures. The outcome following non-operative treatment is good even in the presence of occult fractures. We advocate early mobilisation and repeat plain radiographs if patients fail to progress. This will reduce unnecessary morbidity from fixation of stable occult fractures.
Introduction/objectives: After effect of Femoro acetabular impingement are nowadays recognized as a major cause of hip pain in the athletic population. In this population an accurate evaluation of the hip morphology and its FLO M. are of crucial importance to understand the specific impingement. Athletes have motion request that aren’t usual for the non-athletic population. Dynamic evaluation of the hip. The use of a collision model can improve the comprehension of the sport specific impingement.

Methods: From Jan 2014 to Jul 2016 we treated 15 professional sports players. Clinical evaluation including all preoperative exams, a collision model can simulate the hip ROM and reproduce the specific impingement. In conclusion our experience with dynamic software assisted visualization of FAI has been extremely helpful. Software assisted FAI evaluation is an effective tool to improve our understanding of sports specific impairment and can improve the outcome of our treatments.

Results: In these cases the collision model software provides several crucial information including quantification of total acetabular coverage therefore suggesting to limit our trimming only to the femoral side. Of crucial importance is the possibility to analyse the alpha angle in relation to the acetabulum and to simulate pre operatively the specific sport impinging spots.

Conclusion: A collision model software can give several crucial information regarding static hip morphology. In addition to other static pre-operative exams, a collision model can simulate the hip ROM and reproduce the specific impingement. In conclusion our experience with dynamic software assisted visualization of FAI has been extremely helpful. Software assisted FAI evaluation is an effective tool to improve our understanding of sports specific impairment and can improve the outcome of our treatments.

O04 Trauma

O04-215

INFLUENCE OF COGNITIVE IMPAIRMENT ON MORTALITY, COMPLICATIONS AND FUNCTIONAL OUTCOME AFTER HIP FRACTURE: DEMENTIA AS A RISK FACTOR FOR SEPSIS AND URINARY INFECTION

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Introduction/objectives: To analyze the influence of cognitive impairment on mortality, complications and functional outcomes in patients older than 65 with a hip fracture.

Methods: Observational study of a single-center prospective consecutive cohort: 935 patients of 86±12 (85-104) years, 725 (79.5%) female, from 2010 to 2015, extravascular in 536 cases (56.3%) and intravascular in 417 (43.7%). Patients were controlled clinically and radiologically in out-patient clinic after up to 12 months. Statistical analysis: Binomial analysis (Pearson, Fisher, Mann-Whitney, Wilcoxon) was applied to study statistically significant relations, and contingency coefficients (CC) were calculated.

Results: Patients with cognitive impairment showed higher mortality, total (p=0.005; CC=0.197) and out-of-hospital (p=0.002; CC=0.209), a higher rate of respiratory infections (p=0.050; CC=0.096), urinary tract infections (p=0.000; CC=0.105) and sepsis (p=0.001; CC=0.105). We found no correlations between mental status and surgical complications, even for dislocation (p=0.105). Patients with dementia started from poorer functional situations (p=0.000; CC=0.37), but cognitive impairment did not relate statistically with a worse functional recovery (p=0.364), the proportion of patients who maintained their previous ability to walk was similar in both groups (altered mental status and not).

Conclusion: 1. Cognitive impairment is a risk factor for mortality in Hip fracture patients.
2. Cognitive impairment is a risk factor for respiratory, urinary tract infection and sepsis (These two late are not published previously).
3. Functional recovery is not conditioned by cognitive impairment.

O04-426

PERIOPERATIVE OUTCOMES OF ACUTE FIXATION AND HIP REPLACEMENT FOR ACETABULAR FRACTURES IN PATIENTS OVER 60 YEARS OF AGE

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Introduction/objectives: The incidence of fragility fractures of the acetabulum in older patients is increasing. Management may be non-operative, acute fixation or fixation with hip replacement. Review of the literature suggests a trend towards better outcomes in patients who are allowed early mobilisation and full weight bearing thus avoiding sarcopenia, deconditioning and dependence disability. This paper describes our experience of ‘fix and replace’ in an older cohort of patients.

Methods: This is a retrospective study. Medical records and imaging for 45 patients over 60 years of age treated with acute column fixation and THR over 3 years were reviewed. Co-morbidities, ASA grade, injury mechanism, fracture type and peripipative complications were recorded. Pathological fractures were excluded.

Results: Thirty-six patients were included. Average age was 74.7 years, median ASA 3. Eighty-four percent of these injuries occurred as a result of low-energy simple fall. Seventy-eight percent of the acetabular fractures involved both columns with fragmentation and dome impaction. Incongruity and instability are present. Many surgical approaches have been described for treatment, with the disadvantage of limited exposure. 360-degree view of the head can be achieved through Surgical hip dislocation which facilitate reduction in selected head fractures.

-Objective: We report on the (1) quality of fracture reduction, (2) clinical function at a minimum of 1 year (3) frequency of complications especially avascular necrosis in a case series with treated with this approach.

Methods: We retrospectively reviewed 31 cases of fracture head femur treated through surgical hip dislocation in the period from 2011 to 2017 with a minimum follow-up of 12 months (range 12-60). We found no correlations between mental status and surgical complications, even for dislocation (p=0.105). Patients with dementia started from poorer functional situations (p=0.000; CC=0.37), but cognitive impairment did not relate statistically with a worse functional recovery (p=0.364), the proportion of patients who maintained their previous ability to walk was similar in both groups (altered mental status and not).

Conclusion: 1. Cognitive impairment is a risk factor for mortality in Hip fracture patients.
2. Cognitive impairment is a risk factor for respiratory, urinary tract infection and sepsis (These two late are not published previously).
3. Functional recovery is not conditioned by cognitive impairment.
Introduction/objectives: Several authors have reported on time to surgery (TTS), length of stay (LOS) and total cost. Anecdotal evidence from our service suggests that all hip fractures are not created equal. We decided to investigate this suspicion within our trauma service in a regional hospital. If ‘money is to follow the patient’ this work has important implications for patient management.

Methods: We captured data on a retrospective cohort of 490 neck of femur (NOF) fractures which had a surgical procedure performed at Mayo University Hospital. After capturing case-level data from patient charts and theatre logbooks, we analysed this fracture population and show how patient demographics and operative features may directly impact LOS and cost of treatment.

Results: Eight patients required major optimisation before hip surgery while only 16 (or 4%) went to surgery more than 2 days after admission. Mean TTS was 28 hours with 329 (99%) patients reaching theatre within 24 hours of admission. 55% underwent hemiarthroplasty while 45% received fixation. Hemiarthroplasty took 1:19 while fixation took 0:03 longer. LOS did not correlate to age or to operation performed. LOS was significantly shorter for patients discharged Home (12 days, same hemiarthroplasty / fixation ratio). Mean total cost is 22,155 with implant, theatre and ward costs 1,045, 2,555 and 18,555 respectively.

Conclusion: LOS is significantly less for patients discharged Home (p < 0.001) they are 5 years younger than the 1/3 discharged to Rehabilitation. Total cost of DHS (21,758) is 23% less than that of an IF Nail (28,385); PCCP is 1/2 the cost of an DHS or IF Nail (p < 0.05). The charge for an orthopaedic bed (700/day) is still the most critical cost factor, 18,555, or 84% of 22,155.

Introduction/objectives: The prevalence of Parkinson’s disease (PD) is increasing. This condition imparts a significantly increased risk of hip fracture. A retrospective cohort analysis was performed to establish whether patients with PD had worse outcomes following hip replacement surgery (HR) for treatment of acute fractures. Outcomes following hemi or total arthroplasty were evaluated by comparison of revision rates recorded for matched patient groups and mortality rates observed.

Methods: Patients who underwent HR surgery following acute hip fracture between 2005 - 2012 with PD were identified using datasets available through the Swedish Hip Arthroplasty Register. A control group was generated, with 1:3 matching of age, sex and body mass index.

Results: Risk of mortality did differ at 30 days (p=0.034), at 1 year (p=0.002) and at 7 years (p=0.001) with increased mortality for PD patients (p=0.031). Risk of revision did not differ at 30 days (p=0.16). At 1 and 7 years, revision was worse for PD patients (p=0.007). Overall, indications for revision observed in the PD group were predominantly for dislocation/instability.

Conclusion: Patients with PD had worse outcomes following total or hemiarthroplasty following hip fracture, with increased risks of revision and long-term mortality. In order to improve outcomes in this patient population further investigations are needed to analyse the reason for increased revision. With a predicted increase in prevalence of Parkinson patients with hip fractures a true multidisciplinary approach has to be considered to improve outcomes.
Introduction/objectives: The aim of this study was to create an algorithm of choosing the optimal method of total hip replacement in patients with consequences of severe acetabular fractures and pelvic discontinuity.

Methods: 150 patients with consequences of severe acetabular fractures and pelvic discontinuity were divided into two groups. In the algorithm, the rate of postoperative blood loss, duration of surgery, and hospital stay were compared. The rate of complications and the need for additional surgery were also evaluated.

Results: The algorithm was designed for use in acetabular reconstruction with bone stock deficiencies and pelvic discontinuity. This was shown by better functional outcomes in this group of patients.

Conclusion: Combining Burch-Schneider Reinforcement Cage with the acetabular component (Cup-cage) in total hip arthroplasty in patients with dysplasia is preferable to create primary stability. The acetabular arthroplasty with hook shows favourable long-term outcomes. Structural bone grafting was identified as a risk factor for failure. The overall survival rate was 95% (95% confidence interval, 6.6 [5.0-8.2], p-value 0.023).

RESULTS OF PERTROCHANTERIC FIXATION WITH PROXIMAL HUMERUS PLATE IN PATIENTS WITH TOTAL HIP ARTHROPLASTY

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Introduction/objectives: Implantation of a total hip arthroplasty (THA) presents a concern in patients with congenital hip disease (CHD) because bone deformities and previous surgeries. We compared surgical difficulties and outcome in patients who underwent THA due to arthritis secondary to severe CHD with those in control patients with moderate CHD.

Methods: We assessed 131 hips in patients with moderate CHD (group 1) and 56 with severe CHD (group 2) who underwent an alumina-on-alumina THA between 1999 and 2012. The mean follow-up was 11.3 years (range, 5 to 16). Mean age was 51.4 years in group 1 and 42.2 in group 2. Two-way ANOVA with repeated measures were used to analyse clinical and radiological changes.

Results: We implanted a small cup in the true acetabulum and bone autograft was only used as segmental reinforcement. Fleiss' kappa statistical analysis was used to measure the level of agreement between two different orthopaedic surgeons in evaluating the x-rays for fracture healing. Chi-squared test was performed to compare categorical data between the two groups.

Conclusion: As a versatile tool for acetabular reconstruction in bone stock deficiencies the acetabular reinforcement ring with hook shows favourable long-term outcomes. Structural bone grafting is needed for reconstruction failure rate is substantially higher.
O05 Complex primary THA 1

O05-105
OUTCOMES OF TOTAL HIP ARTHROPLASTY AFTER PRIOR ACETABULAR FRACTURES
Godoy Menzon, D.; (1) Battuto, M.; (1) Skull, P.; (1) Cieł Castañari, A.; (2) Turis, L.; (1) Pisciugga, F.; (1) Groupo Gamma, Rosario, Argentina

Introduction/objectives: Total Hip Arthroplasty (THA) after an acetabular fracture (AF) is a technically demanding procedure. Thus, we aimed to evaluate our THA cases performed for post-traumatic sequelae following an AF, with a minimum 4-year follow-up.

Methods: Between 2011-2014, we performed 49 post-traumatic THAs (30 male and 19 female). All cases had prior undergone surgery due to a closed AF. Patients' average age was 47.3 years (range, 25-73). Average time from AFs initial treatment to THA was 11 months (range, 9-18). Complete removal of previous hardware was necessary in 7 cases (14.2%), partial removal in 19 (38.7%), whereas in the remaining cases the prior osteosynthesis was left in-situ. A cemented cup was used in 13 patients (26.5%) and an uncemented one in 36 patients (73.5%). Morselized bone graft was used in 15 cases (30.6%) to fill different degrees of acetabular defects. An acetabular cage was indicated in 6 patients (12.2%). Mean follow-up 4.6 years (range, 4-6). Patients were evaluated at 3 weeks, 6 months and once every year to last follow-up.

Results: Mean preoperative Harris Hip Score (HHS) score was 42 points (range, 25-58), reaching 91 points at final follow-up (range, 82-96). Revision surgery was required for aseptic loosening of the acetabular component in 3 cases (6.1%). Seven acetabular caps presented with radiolucent lines without component migration in otherwise asymptomatic patients. Two patients had surgical site infection and were treated with irrigation and debridement, whereas 2 other cases had a superficial wound infection. We collected all difficulties and postoperative complications to find best approach to these patients.

Conclusion: THA following AFs showed acceptable results, being slightly inferior to those reported for degenerative hip disease.

O05-494
CORRECTIVE OSTEOTOMIES IN CHILDHOOD ARE A RISK FACTOR FOR COMPLICATIONS DURING THA IN HIP DYSPLASIA
Crispica, K.; (1) Sulic, Z.; (1) Delimar, D.; (1) Bicanic, G.; (1) Clinical Medical Center Zagreb, Zagreb, Croatia; (2) Al Zahr Hospital, Dubai, United Arab Emirates

Introduction/objectives: The aim of this work is to report results of un cemented femoral and acetabular components. All acetabular components were made of trabecular titan. Among 16 non-satisfactory results there were 4 dislocations, 6 aseptic loosening of the femoral component, 1 deep periprosthetic infection, 1 aseptic loosening of the acetabular component, 1 peroneal paralysis and 1 early polyethylene exchanges due to the increased wear. All of the complications occurred in the patients that were operated before in the childhood. All 6 aseptic loosening of the femoral component were seen in the patients that had femoral osteotomy done in the childhood. Acetabular component loosening occurred because of the initial malposition.

Conclusion: Un cemented acetabular components made of trabecular titan showed excellent short term survival. Corrective osteotomies in childhood are a risk factor for complications during THA.

O06 Complex primary THA 1

O06-586
EXTENSIVE SOFT TISSUE RELEASE IN PRIMARY TOTAL HIP ARTHROPLASTY IN PATIENT WITH HIGH RIDING>4 CM PROXIMAL FEMUR
Sharpar, O. (1)

Case Study: Hip arthroplasty in patients with high riding proximal femur is one of the most challenging issues in joint surgery setting. Patients with old missed proximal femoral fracture or high level type 4 of dysplastic hip are complicated cases for hip replacement surgery and usually you don't know how much of discrepancy could be managed during surgery. Soft tissue release around the hip or proximal femur shortening are two strategy for approach the patient and getting the anatomical site of acetabulum in true position.

But we have limitations in both way and we must balance between soft tissue and bone procedure to get best results with less complications and most patient satisfaction.

We studied around 15 patients with more than 4 cm of femoral shortening with different causes of hip problems needing joint replacement. We managed all these patients with extensive soft tissue release step by step to insert acetabulum component in correct position and gain maximal limb length near to other normal limb. We didn’t do proximal femur shortening in any of cases and our surgeries have done in a regular grading way and special postoperative care. The four processes utilized for high grading of proximal femur were as follows.

1. The adductor and parts of the iliotibial tract 2. Secondarily, the iliosposi muscle's attachment and rectus femoris and vastus medialis release. Thirdly, gracilis and biceps femoris, to the ischial tuberosity. We collected all difficulties and postoperative complications to find best approach to these patients.

Conclusion: THA following AFs showed acceptable results, being slightly inferior to those reported for degenerative hip disease.

O06-22D
LONG-TERM RESULTS OF SINGLE-STAGE OPEN REDUCTION, SALTER INNOMINATE OSTEOTOMY, AND PROXIMAL FEMORAL OSTEOTOMY IN CHILDREN WITH DEVELOPMENTAL DYSPLASIA OF THE HIP
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Introduction/objectives: We retrospectively reviewed the cases of 65 patients who had 87 single-stage open reductions, Salter innominate osteotomies, and proximal femoral osteotomies between 1978 and 2006. We evaluated the radiographic results, the acetabular index and the Wiberg center-edge angle were measured, and the Severin and Kalamchi-MacEwen classifications were used.

Methods: To retrospectively review the cases of 65 patients who had 87 single-stage open reductions, Salter innominate osteotomies, and proximal femur osteotomies between 1978 and 2006. To evaluate the radiographic results, the acetabular index and the Wiberg center-edge angle were measured, and the Severin and Kalamchi-MacEwen classifications were used.

Results: At the time of the operation, the mean age of the patients was 3.4 (range 1.0-10.1) years. The average time of follow-up was 16.2 years (range, 10-38). A total of 79.6% of good or excellent outcomes were obtained for clinical functional evaluation according to the McKay classification. For radiographic outcomes, 67 hips (75.9%) were classified as good or excellent according to the Severin classification. A total of 23% of all hips had a poor outcome according to the Kalamchi and MacEwen classification for AVN.

Conclusion: One-stage treatment is a good selection for late-diagnosed DDH. Best results can be obtained in children in the age group of 1.0-5 y. with typical DDH non-associated with other congenital malformations and without signs of AVN at the time of surgery.
Introduction/objectives: In-situ screw fixation is still currently the 'gold standard' treatment for SCFE and has shown acceptable results at mid-term follow-up. This aims to evaluate functional and radiographic long-term outcomes after this procedure.

Methods: Sixty-five SCFE patients were treated between 1983 and 1998, 38 underwent clinical and radiographic examination with a mean follow-up of 23 years (range 18-33). 7 patients were contacted but could not attend clinic. 12 patients were lost to follow-up.

Results: Initial radiographs demonstrated a mild slip in 53.3%, moderate in 31.1% and severe in 15.6% based on the [radiographic] classification. 82.9% were stable and 17.1% unstable according to Leunen’s definition.

Ten hips (15.4%) were converted to a total hip replacement (THR) at a mean of 16 years after surgery. There were no cases of AVN. Mean Harris Hip score of the remaining 38 patients was 79.1/100. VAS score 46/100. Ten patients required a positive FADIR and a limited internal rotation in 90° flexion of 19.7° vs. 35.6° normal hip.

Radiographic analysis demonstrated osteoarthritic changes in 68.2% (Rösser 1: 40.9%, 2: 18.2%, 3: 9%). Slip severity 3.8/10, VAS Function 1.7/10 and VAS Pain 1.9/10. Twenty-one percent of patients were found to have a positive FADIR and a limited internal rotation in 90° flexion of 19.7° vs. 35.6° normal hip.

Conclusion: The long-term follow-up study of in-situ pinning for SCFE shows that although complication rates in terms of avascular necrosis remain low, a high number of patients become symptomatic and have a limited function. Degenerative changes are not uncommon with 22.2% of the patients developing end stage arthritis. It is important that patients and parents are informed of these risks.

Conclusion: The paediatric hip

O06-49
LIZAROV APPARATUS FOR MANAGING SEVERE TYPES OF PERTHES’DISEASE
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Izvor Center RTO, Kurgan, Russian Federation

Case Study: Introduction: A great number of authors doubt in the expediency of external fixation for treating Perthes disease. Purpose: We present the results of applying apparatus techniques for managing severe types of Perthes’ disease. Materials and methods: We analyzed the results of treatment of 35 patients (20 boys) to 10 years with Perthes’ disease in the fragmentation stage. 23 patients underwent pelvic osteotomies and 12 underwent femoral osteotomies. According to Catterall and Ficat, group B/C 24 cases, group C - 15. In all cases the applied hip decompression by external fixation, percutaneous joint components with wires and injections of cell-bone suspension into femoral head. The method was applied in an isolated form in 18 cases (group I). In 10 observations made additional vascular osteotomies (group II). In 12 cases - the minimally invasive osteotomy (group III). Indications to perform additional interventions have established based on the age, the magnitude of NSA, extent of the violation of the articular relationships. Results: Complete restoration of the epiphysis after apparatus removal was: in group I - 19.8 ± 0.4 m., in group II 12.9 ± 0.5 m., in group III 6.8 ± 0.6 m. Distribution of joints according to Stulberg’s classification (class I - 6, II - 7, III - 2, IV - 1), class I - 3, class II - 5, class III - 2, group I - 3, class II - 7, class III - 2, group IV - 1. Conclusions: Middle-term follow-up showed that the surgeon should use the apparatus in all patients.

O06 The paediatric hip

O06-223
PELVIC AND FEMORAL OSTEOTOMY FOR THE TREATMENT OF LEGG-CALVÉ-PERTHES DISEASE
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Introduction/objectives: Pelvic and femoral osteotomies are both effective for achieving a spherical femoral head in patients with Legg-Calval-Pertes disease (LCPD). The aim of this study was to evaluate other outcomes.

Methods: We retrospectively reviewed 34 hips in 34 patients with LCPD who underwent either pelvic osteotomy or proximal femoral varus osteotomy during the initial stage between 6 and 8 years old. Twelve hips underwent pelvic osteotomy and 22 hips underwent femoral osteotomy. The evaluation of the outcomes was made on the basis of Stulberg’s classification, acetabular coverage (AC), height of the greater trochanter, and leg shortening at the final follow-up, and the period between the operation and completion of repair. For the comparison between the two groups, Student’s t-test and Fisher’s exact test were used. Level of Evidence - Level IV.

Results: At the final follow-up, the mean age of the patients was 13.6 years and Stulberg’s classification was categorized as I I/II in 55 hips (53%). The mean AC was 89° in the control group and 90° in the femoral group (P=0.71). The height of the greater trochanter was categorized as zone 4 in 44 hips (43%) of the pelvic group and 15 hips (45%) of the femoral group (P=0.72). The mean leg shortening was 5.8 mm and 6.2 mm in the pelvic and the femoral group respectively (P=0.92). The period between the operation and completion of repair was shorter in the femoral group (mean: 40 months) than in the pelvic group (mean: 57 months) (P<0.05).

Conclusion: Femoral osteotomy was beneficial for rapid repair in patients between 6 and 8 years old if the operation was performed at the initial stage.

O06 The paediatric hip

O06-279
PARAMETERS OF SAGITTAL SPINOPELVIC BALANCE IN CHILDREN WITH DYSPLASTIC HIP SUBLUXATION
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Introduction/objectives: To date the sagittal profile in patients with various spinal pathologies has been studied in detail and there are no characteristics regarding the spinopelvic balance in children with dysplastic subluxation of the hip.

Methods: The analysis of the examination results in 40 (100%) adolescents aged 12 to 17 years. The changes in femoral neck-shaft angle and angle of antetorsion of the proximal hip, global lumbar lordosis and features of spinal-pelvic ratios (PL, SS, PT, SVA) were made. The X-ray data evaluation was performed with the use of "Surgimap2.2.12".

Results: The average points of the neck-shaft angle and the angle of antetorsion comprised 139.4 ± 7.8° and 37.8 ± 8.9° respectively. The average index of lumbar lordosis comprised 34.3 ± 8.5°. In all patients the mean SS indicator comprised 43.2 ± 10.9° which indicates excessive pelvic anteriorization. In all patients, SVA was projected posteriorly from the sacrum averaged at 15.63 ± 6.7 mm. A pronounced positive relationship between angle of antetorsion and SS (r = 0.86, P<0.05) and respectively OLL has been established.

Conclusion: 1. The disturbance in the stability of hip joints inevitably influences the condition of the vertebral-motor segments in the lumbar spine. 2. Excessive angular values of antetorsion of proximal femur lead to the excessive pelvic anterior rotation which in its turn changes the sagittal profile of the lumbar spine towards hyperlordosis.

O06 The paediatric hip

O06-9
DEGENERATIVE CHANGES OF THE HIP FOLLOWING SLIPPED CAPITAL FEMORAL EPhipPHYSIS: A MINIMUM 18-YEAR FOLLOW-UP STUDY
Touquet, J. (*); Ghjevings, S. (1,2); Meirea, P. (1,2);
(1) UZ Pellenberg, Pellenberg, Belgium

Introduction/objectives: In-situ screw fixation is still currently the 'gold standard' treatment for SCFE and has shown acceptable results at mid-term follow-up. This aims to evaluate functional and radiographic long-term outcomes after this procedure.

Methods: Sixty-five SCFE patients were treated between 1983 and 1998, 38 underwent clinical and radiographic examination with a mean follow-up of 23 years (range 18-33). 7 patients were contacted but could not attend clinic. 12 patients were lost to follow-up.

Results: Initial radiographs demonstrated a mild slip in 53.3%, moderate in 31.1% and severe in 15.6% based on the [radiographic] classification. 82.9% were stable and 17.1% unstable according to Leunen’s definition.

Ten hips (15.4%) were converted to a total hip replacement (THR) at a mean of 16 years after surgery. There were no cases of AVN. Mean Harris Hip score of the remaining 38 patients was 79.1/100. VAS score 46/100. Ten patients required a positive FADIR and a limited internal rotation in 90° flexion of 19.7° vs. 35.6° normal hip.

Radiographic analysis demonstrated osteoarthritic changes in 68.2% (Rösser 1: 40.9%, 2: 18.2%, 3: 9%). Slip severity 3.8/10, VAS Function 1.7/10 and VAS Pain 1.9/10. Twenty-one percent of patients were found to have a positive FADIR and a limited internal rotation in 90° flexion of 19.7° vs. 35.6° normal hip.

Conclusion: The long-term follow-up study of in-situ pinning for SCFE shows that although complication rates in terms of avascular necrosis remain low, a high number of patients become symptomatic and have a limited function. Degenerative changes are not uncommon with 22.2% of the patients developing end stage arthritis. It is important that patients and parents are informed of these risks.
Surgical treatment of type II avascular necrosis (AVN) of the femoral head in children is difficult.

Methods: We performed 66 femoral osteotomies in 62 patients aged 2 to 16 years. Of these, 39 were femoral varus derotation osteotomy (VDRO) and 27 posterior rotational osteotomy (PRO) of the femur. VDRO was performed if joint stability was restored in the position of abduction and internal rotation of the hip. PRO was performed if congruence was improved and centering of the femoral head in the hip joint’s epiphysis position was restored, as well as in the aggressive type of deformation. The level of evidence of this retrospective study is IV.

Results: The II type of AVN is revealed on average in the age of 9 years in 75.8% of cases. In 24.2% of cases deformation develops up to the age of 5 years. The beginning of displacement of the epiphysis usually occurs in the 6-7 years of the child’s life. Clear symptoms of deformity are usually determined after 8-9 years. Decentration of the femoral head was in 98.5% of cases, incongruence of articular surfaces in 30.3% of cases, multiplanar deformation of the proximal femur in 85.2%. Long-term results were traced to the end of bone growth (on average, 7 years, 8 months). At the age of the patient at the time of intervention up to 8 years, VDRO gives 2 times more bad results (Severin 3 and 4) than PRO (Severin 1 and 2). PRO is reliable (p <0.05) better than VDRO eliminates the incongruence of the articular surfaces and gives better results in the aggressive type of deformation.

Conclusion: a differentiated approach is required in the choice of osteotomy of the femur in type II AN.

Introduction/objectives: Tranexamic acid (TXA) is used to reduce blood loss and the need for transfusion after primary total hip arthroplasty. The purpose of this study was to investigate the effect of different TXA regimens on blood loss and transfusion rate.

Methods: This was an analysis of prospectively collected data on 800 primary THAs. In 300 THAs, the patient received a fixed dose of 1 g of TXA at the beginning of the operation. In the other 500 THAs, the patient received a weighted dose of 30 mg/kg of TXA. Patients with a contraindication for TXA were excluded. A standardized transfusion trigger was used.

Results: The differential hemoglobin level was 2.2 g/dL SD 0.9 for the 1 g TXA cohort compared with 2.0 g/dL SD 0.7 for the 30 mg/kg TXA cohort which was statistically significant (p=0.05). There was also a greater variance in differential hemoglobin level in the 1 g TXA cohort compared with the 30 mg/kg TXA cohort (0.95% vs. 2.10-2.32 versus 1.98-2.16) (p=0.0006). There were 5 patients in the 1 g TA cohort who had an allogeneic transfusion (3.0%) compared with 4 patients in the 30 mg/kg TXA cohort (1.3%). Although this was not statistically different (p=0.16), this can be clinically relevant and represents a relative risk of 1.4 (95%CI 0.98-2.02) and an odds ratio of 2.3 (95%CI 0.79-7.52).

Conclusion: This study confirms that the use of TXA in patients undergoing primary THA can result in a very low transfusion rate. A weighted dose of 30 mg/kg TXA resulted in less hemoglobin drop and resulted in a lower transfusion rate compared with a fixed dose of 1 g TXA. These results suggest that a single weighted dose of TXA is more effective in reducing blood loss after primary THA compared with a single fixed dose.

Introduction/objectives: Objective is to analyze the causes and consequences of AVN in children with CHD.

Methods: Anamnesis, clinical and X-ray data of 38 children (42 hips) with AVN were studied. All patients were previously treated in other medical institutions. They were divided into 4 groups according to the age. The algorithm considering child’s age, orthopedic status and X-ray data of the hip was used to choose the surgery.

Results: The main causes of AVN were determined and divided into 3 groups: 1) traumatic primary interventions; 2) severity of hip dysplasia; 3) failed rehabilitation. The severity of AVN was assessed according to the Tönnis classification. The severest vascular disorders were detected in children from the group 1 (aged under 3 years) with the elements of proximal femoral distraction and were combined with subtotal (1/2) loss of the femoral head. Depending on the child’s age, the X-ray and clinical examination results, the following types of surgery were performed: different types of corrective osteotomies, hip arthroscopy in combination with or without acetabular correction by Salter (or triple pelvic osteotomy). Postoperative rehabilitation included the correction of vascular and trophic disorders, hydrodynamic cuffed therapy. Long-term outcomes were evaluated by Harris functional scale. When analyzing long-term outcomes for 5 years we noted the conditions to restore damaged hip in all cases.

Conclusion: The majority of severe cases of AVN is associated with traumatic treatment in young children, or failed rehabilitation principles. Any vascular disorders in the femoral head during the child’s growth and hip joint development lead to the secondary deformities of the proximal femur, residual avascular necrosis.

Introduction/objectives: TOPICAL, INTRAVENOUS AND COMBINED TRANEXAMIC ACID ADMINISTRATION FOLLOWING PRIMARY TOTAL HIP ARTHROPLASTY.

Methods: In this prospective study 286 patients (285 hips) who underwent THA were divided into four groups. Group A (85 hips) received 2.5 g of topical TXA, Group B (76 hips)-control, no TXA, Group C (88 hips)-1g intravenous TXA and Group D (56 hips)-topical and intravenous TXA. The primary outcome was the total haemoglobin count and blood loss. We also assessed the need for transfusion, reduction in haemoglobin, length of hospital stay and complications. Blood loss was calculated according to Nadler formula. Chi-square, ANOVA and Bonferroni methods were used to compare the data.

Results: Patient demographic characteristics were similar between groups. Two patients (3.1%) in Group A, 4 (5.3%) in Group C, and 1 (1.3%) in Group D were transfused (p=0.78). Haemoglobin loss was significantly higher in Group B (p=0.001). The mean reduction in haemoglobin at 48 hours was lower in the topical group (p=0.05). Only one patient in the topical group had a pulmonary embolism at 72 hours after surgery which resolved without complications.

Conclusion: Topical, intravenous or combined TXA administration provides equivalent reductions in haemoglobin and blood loss after primary THA. Considering these results, it must be surgeon’s decision as to which form of TXA is more convenient taking into account the patient’s risk factors.
O07-416
THREE AND A HALF YEARS OF EXPERIENCE WITH OUTPATIENT TOTAL HIP ARTHROPLASTY
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Introduction/objectives: In the last few years there has been a continued interest in reducing length of hospital stay (LOS) after primary total hip arthroplasty (THA). In April 2014 we started with THA in an outpatient setting for selected patients. The objective of this study was to report our experience with the three and a half years of THAs in an outpatient setting.

Methods: In this prospective cohort study we included all patients who were planned to receive primary THA in an outpatient setting between April 2014 and October 2017. Patients with cardiovascular history and diabetes were excluded. Moreover, patients had to be motivated and had to have a caretaker at home. Postoperative follow-up was up 6 weeks, 3 and 12 months.

The Short Form of the Hip disability and Outcome of Hip Arthroplasty Score (HOOS-PS), Oxford Hip Score (OHS), EQ-5D, and the Numeric Rating Scale (NRS) for pain in rest and during activity were taken preoperatively and at 6 weeks, 3 and 12 months postoperatively. Furthermore, anchor questions on patients functioning in daily living were scored at 6 weeks and 3 and 12 months postoperatively. All complications were registered.

Results: A total of 257 patients met the inclusion criteria. There were 40 patients who stayed in the hospital mainly because of postoperative nausea or dizziness. All other 217 patients went home the day of surgery. Of these 217 patients, mean age was 63 years (41 - 79), mean BMI was 26.8 kg/m2 (18.3 - 36.9). Mean HOOS-PS, OHS, EQ-5D and NRS for pain all improved significantly. There were three re-admissions and two re-operations.

Conclusion: This study confirms that outpatient THA can be performed successfully in a selected group of patients, with satisfying results up to 1 year postoperatively, and without troublesome side effects.

O07 Patient management 1
O07-352
DOES PREOPERATIVE PAIN CATASTROPHISATION PREDICT PATIENT-PERCEIVED OUTCOME AFTER PRIMARY HIP ARTHROPLASTY?
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Introduction/objectives: To examine the relationship between preoperative pain catastrophisation and patient-reported outcome in patients undergoing primary total hip replacement (THR).

Methods: We performed a retrospective study using data from our hospital arthroplasty database. We identified 103 patients who underwent primary THR and had completed a preoperative Pain Catastrophising Scale (PCS) questionnaire and preoperative/12-month postoperative Oxford Hip Scores (OHS). Patient demographics and clinical variables such as BMI, ASA, duration of surgery and length of stay were recorded. The correlation between PCS and postoperative change in OHS was assessed, including a regression analysis to assess the effect of PCS and other clinical variables on OHS change.

Results: Preoperative PCS had a weak negative correlation with postoperative change in the OHS (r =0.24; P=0.014). Univariate analyses found BMI, number of comorbidities, length of stay, ASA grade and PCS to be negatively correlated with change in OHS postoperatively. Multiple linear regression revealed that the only statistically significant predictor of postoperative OHS was the PCS (P=0.0207).

Conclusion: Preoperative PCS has a negative correlation with the change in OHS following THR, demonstrating that in this cohort, higher preoperative catastrophisation tends to correspond with poorer improvements in OHS pre- to postoperatively. Use of the PCS in the preoperative assessment may help identify patients who could benefit from additional psychological support and assist in setting realistic expectations of THR by informing patients of possible outcomes. Further work is needed to determine if cognitive-behavioural interventions can improve postoperative outcomes in patients with high pain catastrophising tendencies.

O07 Patient management 1
O07-365
RECOVERY TRAJECTORIES AFTER TOTAL HIP ARTHROPLASTY (THA): FAST STARTERS, SLOW STARTERS AND LATE DIPPERS
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(1) Parlier de Graaf Hospital, Orthopedic Department, Delft, Netherlands; (2) Dutch Arthroplasty Register, Landelijke Registratie Orthopedische Implantaties (LRoI), n-Heerlen, Netherlands; (3) Delft University of Technology, Faculty of Industrial Design Engineering, Delft, Netherlands

Introduction/objectives: To explore whether subgroups of patients with different functional recovery trajectories after THA can be discovered, as well as their predictors, using data from the Dutch Arthroplasty Register (LRoI).

Methods: We retrospectively reviewed prospectively collected Oxford Hip Scores (OHS) up to one year postoperatively of 6030 primary THA patients. Latent growth curve modelling (LGCM) was used to classify groups of patients according to their trajectory of functional recovery. We used multivariable multinomial logistic regression analysis to explore predictors of class membership.

Results: LGCM identified Fast Starters (fast initial improvement and high 12 month scores, 87.7%), Slow Starters (no initial change and subsequent improvement, 4.6%) and Late Dippers (initial improvement and subsequent deterioration, 4.6%). 6030 primary THA patients. Latent growth curve modelling (LGCM) was used to classify groups of patients according to their trajectory of functional recovery. We used multivariable multinomial logistic regression analysis to explore predictors of class membership.

Predictors (OR, 95% CI) for Slow Starters were female sex (1.63, 1.14-2.33), smoking (1.95, 1.26-3.03) and anterior approach (0.47, 0.29-0.78).

Predictors (OR, 95% CI) for Late Dippers were age <75 years (1.62, 1.20-2.15), smoking (1.68, 1.17-2.42), ASA equal to or greater than 3 (1.41, 1.01-1.91), obesity, 1.96, 1.42-2.69), EQ-5D Self-Care (1.41, 1.01-1.82) (same problems), EQ-5D Anxiety/Depression (1.31, 1.00-1.71) (moderately) and 1.06, 0.86-2.44 (extremely). EQ-5D VAS (0.91, 0.86-0.97 per 10 points), direct lateral approach (2.18, 1.58-3.02) and hybrid fixation (1.79, 1.00-3.21).

Conclusion: We discriminated Fast Starters, Slow Starters and Late Dippers after THA regarding functional recovery trajectories. Sex, age, BMI, ASA scores and EQ-5D scores predicted an unfavourable response to THA, as well as approach and fixation.
Introduction/objectives: Total Hip Arthroplasty (THA) is considered one of the most successful surgical treatments available. At present postoperative physiotherapy is not always covered by the basic health insurance in the Netherlands. Recent developments in technology are promising for providing home-based exercise programs. The aim of the study was to compare the effectiveness of a home exercise program with usual care after a THA in the Netherlands.

Methods: A comparative study. Patients aged 18-65 who received a THA as a treatment for primary or secondary osteoarthritis were included. Patients followed a 12-week exercise program with video instructions on a tablet PC. Patients were asked to do strengthening and walking exercises at least five days a week. This patient group was compared with a patient group that received usual care after a THA. Effectiveness was measured at four different time moments (preoperatively, 4 weeks, 12 weeks and 6 months postoperative), by means of patient self-reported questionnaires (HOOS, SF-36, EQ-5D) and functional tests (Timed Up & Go (TUG), Five Times Sit-to-Stand Test (FTSST)). Descriptive statistics were used to describe patient characteristics. The Mann-Whitney U test was used to test between group differences.

Results: 16 patients completed the program and 23 patients received usual care. Six months postoperatively, the patients of the home exercise program scored significantly better on the TUG and the FTSST, as well as on the ADL and quality of life subscale of the HOOS, the (role) physical functioning of the SF-36 and the index score of the EQ-5D.

Conclusion: A home-based rehabilitation program driven by a tablet application seems to be effective for THA patients and could be an alternative to regular physical therapy.

O08 Fundamental research

O08-233

DYNAMIC TRIAL FITTING OF THE CUP. DOES PRE-EXPANSION CAUSES LOSS OF PRIMARY STABILITY (A BIOMECHANICAL STUDY)

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Introduction/objectives: Trial fitting of the acetabular component is traditionally done by trial cups who do not resemble the real press-fit obtained by the definitive cup. The X-pander® (X-pander AB, Sweden) was developed to mimic the real press-fit obtained by the definitive cup. The purpose of this study was to assess if there is a difference in primary stability when using the X-pander® in comparison to the traditional trial cups.

Methods: A biomechanical study was performed with bovine callus arthroplasia, randomized for placement of the cup with X-pander® or traditional trial cups. Two types of cups were used (Anexa, Mathys and Trident, Stryker). Load out force was compared as a measurement of primary stability with a Mecmesin® AFG 2500 N, a digital force gauge and Mecmesin® MultiTest 2.5-df, a Force Measurement Testing Device For Compression Tests and Traction Testing with VectorPRO MF Materials Testing Software.

Results: For testing, 58 cups were inserted in bovine callus arthroplasia (20 Anexa, 38 Trident) and randomized for trials fitting between a standard trial cup and X-pander®. Cup size varied between 52mm and 60mm. Overall mean load was 45,1 Nm (SD 14,6) for the X-pander® group and 45,0 Nm (SD 14,5) for the control group. After adjustment for potential confounders (Cup size and type) mixed model analysis did not reveal a significant difference in load out between the use of a trial cup and the X-pander® (mean 1,0 Nm, 95%CI: -1,9; 0,0) (p=0,77).

Conclusion: Initial press fit of the implanted cup is not lost by pre-expansion as done with dynamic trial fitting with an X-pander® device. Therefore, the X-pander® can be safely used in clinical practice.
Methods: In 26 patients (28 cases) having hip osteoarthritis, a THA was performed. The patients received either an un cemented THA coated femoral stem or an cemented stem. The contra lateral healthy femur served as reference for normal metabolism. The patients were analysed with clinical score, radiography and F-PET/CT preoperatively. At weeks 6 and 6 months after surgery. At 2 years clinical score and radiography was analysed. We used the Polar Map system for presenting the PET results in 13 regions adjacent to the whole stem.

Results: The clinical and radiographic results were good in all patients. At PET analyses after 6 weeks, the bone mineralizing activity was significantly higher around the uncemented stems, both compared to the cemented group and to the contralateral healthy reference femur group. The cemented group also had an elevated activity but only almost significant.

Conclusion: Mineralizing activity analysed with F-PET/CT was significant higher for the uncemented group. The activity did also decrease at a slower rate for this group. F-PET/CT is a new tool to analyze secondary stabilization of different models of hip prostheses, which is important to the longevity of the prosthesis.
O09 Revision THA 1

009-149
POSTOPERATIVE RESTORATION AND MIGRATION OF THE HIP CENTRE WITH THE USE OF IMPACTION BONE GRAFTING IN REVISION AND COMPLEX PRIMARY HIP ARTHROPLASTY

Keywords: Knee, A. M.; Khalfia, A. A.; Mahran, M. M.; Mosa, M. H.; Bakr, H. M.

Introduction/objectives: Although impaction grafting provided efficacy in the reconstruction of acetabular defects in primary and revision hip arthroplasty, its role in large segmental defects is still debatable. Our objective is to measure hip center restoration and last follow-up migration after acetabular reconstruction with impaction grafting in different types of acetabular defects.

Methods: This is a single-center retrospective radiographic study of (107) total hip arthroplasty (42 primary, and 65 revision) in (104) patients using impaction grafting. The available radiographs (preoperative, immediate postoperative, and last follow-up) were examined for normal, preoperative, immediate postoperative, and last follow-up vertical (V) and horizontal (H) hip center. Maximum Acetabular Defect Distance (MADD), presence and size of the mesh were recorded.

Results: In type I and 2 AAOs defects, the postoperative hip center was not significantly different from the normal hip center measured on the contralateral healthy side or by Ranawat method. In Type 3 Defects there was a significant variation between the normal hip center and the postoperative hip center (P-value: 0.004 and 0.001 for V and H respectively). At 44 months follow-up of 30 hips, 31 (81.5%) hips migrated (range 1-42 mm). The mean amount of migration ± SD was 5.7 ± 3.7, 2.4 ± 1.2, and 11.26 ± 3.9 mm for types 1, 2, and 3 respectively (P-value 0.211). Hips with MADD > 15 mm, with mesh, especially large mesh sizes migrate significantly more (p-value = 0.042, 0.037, and 0.009 respectively).

Conclusion: Hip center restoration was better and migration was less for type 1 and 2 AAOs rather than for type 3. Other options for reconstruction of these challenging defects should be considered.

O09 Revision THA 1

009-354
IMPACTION BONE GRAFTING OR UNCEMENTED MODULAR STEMS FOR THE TREATMENT OF TYPE B3 VANCERER PERIPROSTHETIC FRACTURES? A COMPLICATION RATE ANALYSIS

Keywords: Butts, M. P.; Díaz Dílernia, F. P.; Mc Loughlin, S.; Shafrir, P.; Comba, P.; Zenniti, G.; Piccaluga, F.

Introduction/objectives: Since the gold standard for treatment of type B3 Vancouver periprosthetic femoral fractures (PPF) is yet to be defined, we sought to analyze the complication rate between impaction bone grafting (IBG) technique with a cemented stem and reconstruction with a uncremented distally-fixed modular stem (DFMS).

Methods: We retrospectively studied 55 B3 PPFs operated between 2000-2018, comparing the complication rate of 34 patients treated with IBG technique (group A) with 21 patients treated with DFMS (group B). Median follow-up of groups A and B were 74.7 (IQR 74.4) and 53.2 months (IQR 42.4), respectively (p=0.008). Median age of groups A and B were 82 (IQR, 85) and 85 (IQR, 12) years, respectively (p=0.27). Median number of prior surgeries was 1 (IQR, 1) for both groups (p=0.31). Median grade of Endo-Klink femoral bone defect was similar between both groups (3 [IQR, 3]) vs. 3 [IQR, 3], p=0.11). We performed a multiple regression analysis to determine risk factors for complications including the following: variables: age, initial diagnosis and surgical technique.

Results: As for infection outcomes, two-stage revision surgery was more frequent in group A than in group B (4 vs. 0, p<0.003). Although not significant, group A presented more implant failure than group B (5 vs. 1, p=0.195). We found 4 dislocations in group B and 2 in group A (p=0.182). Multiple regression analysis showed a significant correlation between surgical technique and complication rate (p=0.01). IBG technique presented an odds risk for complications of 0.21 (p=0.016; IQR 0.058-0.75).

Conclusion: Femoral reconstruction with IBG technique evidenced an ostensibly higher complication rate than that of DFMS for the treatment of B3 PPF.
Acetabular reconstruction with structural allograft is a reliable option for type 3A defects acetabulum or posterior wall and column. The main advantage is the potential to restore bone stock. If loosening occurs,

Introduction/objectives: In revision total hip arthroplasty (THA), the cancellous bone is normally completely removed out of the femoral canal during stem extraction. This situation is comparable to primary THA following the shape closed concept, with some authors advocating to remove the metaphyseal cancellous bone to enhance press-fit stability (“French paradox”).

The aim of this study was to investigate the long-term outcomes, regarding survival and radiological results, of a cemented straight stem when used for revision THA and to compare these results to the results of the same primary THA.

Methods: 178 stem revisions performed between 01/1994 and 08/2008 using the Virtuc straight stem were included. The cumulative incidence for re-revision was calculated using a competing risk model. Risk factors for re-revision of the stem were analyzed using an absolute risk regression model. Radiographs analyzed for osteolysis, debonding and subsidence had a minimum follow-up of 10 years. The cumulative incidence for re-revision due to aseptic loosening of the stem was 5.5% (95% Cl. 2.9-10.2%) at 10 years. Aseptic loosening was associated with younger age, larger defect size and larger stem size. After a minimum 10 years follow-up, osteolysis was seen in 39 of 80 revision THA. Compared to the results in primary THA, the survival in revision THA with the same implant was inferior.

Conclusion: Cemented straight stems used for revision THA showed excellent long-term results regarding survivorship and radiological outcome. This stem therefore offers a valuable and cost-effective option in revision THA.

Paprosky IIIA and IIIB acetabular bone defects were detected in 25 and 34 cases, respectively. Ten hips underwent rerevision because of aseptic loosening (6), infection (3), and flange breakage (1).

Between January 1992 and August 2005, 106 hips with acetabular bone loss underwent revision surgery with use of bulk allografts and the Burch-Schneider antiprotrusio cage. Forty-four patients (47 hips) deceased without additional surgery. The remaining 59 hips in 29 patients were available for clinical and radiographic assessment at a mean follow-up of 15.1 years (range, 10.0-21.9). They were 17 males and 42 females, with an average age at surgery of 59 years (range, 28-83).

Paprosky IIIA and IIIB acetabular bone defects were detected in 25 and 34 cases, respectively. Ten hips underwent rerevision because of aseptic loosening (6), infection (3), and flange breakage (1).

Results: Ten hips underwent revision surgery due to aseptic loosening (6), infection (3), and flange breakage (1). Furthermore, 4 cages showed radiographic signs of instability with severe bone resection. The cumulative survival rates at 21.9 years with removal for any reason or a ray migration of the Burch-Schneider cage and aseptic or radiographic failure as the end points were 76.3% and 81.4%, respectively. Mean Harris hip score improved from 33.2 points preoperatively to 75.7 points at the time of follow-up (p < 0.001).

Conclusions: The management of severe acetabular bone loss is a challenging problem in hip revision surgery. The use of the Burch-Schneider antiprotrusio cage and massive allografts proved out to be an effective technique in the reconstructive treatment of extended deficiency of pelvic bone stock with high long-term survivorship.

Introduction/objectives: Total hip revision requires a meticulous planning, with definition of bone defects and appropriate strategies for reconstruction. The purpose of our study was to determine clinical and radiographic outcomes of acetabular revision with use of structural bone graft.

Methods: We performed a retrospective study including patients with acetabular defects. Paprosky 3A submitted to revision surgery with a superior figure 7 distal femur structural allograft with hemispherical cementless cup, at a minimum follow-up of 5 years. The patients were assessed clinically with Visual Analogic Scale and Harris Hip Score and radiographically for graft integration.

Results: Our study included 18 hips with a follow-up of 91 months (60-144). The age of the patients was 65 years (47-86). Considering revision or loosening as endpoints, the survival rate of the structural graft with hemispherical cup was 100% at 5 years, 90% at 7% and 75% at 8 years. Two patients were revised for aseptic loosening with a cementless cup without grafting. One patient showed reabsorption of the graft but remains asymptomatic, without evidence of loosening.

HHS improved from 37 preop to 72/44-65.10 patients refer occasional painVAS≤1 and two have constant pain 3 and 5 respectively. One patient died due to prostate infection after the surgery and two died of unrelated causes and were not included in this study.

Conclusion: Structural allografts are generally used for segmental bone deficiencies involving the superolateral acetabulum or posterior wall and column. The main advantage is the potential to restore bone stock. If loosening occurs, cementless cup without grafting can be performed, which happened in two of our patients. Acetabular reconstruction with structural allograft is a reliable option for type 3A defects.
**O10 Complex primary THA 2**

**O10-414**

HIGH DELOCATION DEVELOPMENTAL DYSPLASIA: TOTAL HIP ARTHROPLASTY WITH SHORTENING SUBTROCHANTERIC OSTEOTOMY

Hernandez, A. (1); Menemina, I. (1); Barro, V. (1); Colado, D. (1); Nuñez, J. H. (1)

1) Val D’Hebron Hospital, Barcelona, Spain

**Introduction/objectives:** Total hip arthroplasty (THA) in high dislocated hip presents great difficulties in restoration of the biomechanical of the hip, and in the election of osteotomy type and the proper implants. The stability of the osteotomy is an important issue.

We present our experience in high dislocation developmental dysplasia with shortening subtrochanteric osteotomy, small hemispheric cup, and Wagner conical stem.

**Methods:** A case series study of 17 hips in 13 patients, who were diagnosed as high dislocation dysplasia between 2008 and 2015.

Clinical evaluation included Harris hip score, Oxford test, complications and Leg length discrepancy.

The radiological evaluation included positions of the cup, leg lengthening, osteotomy consolidation time, biomechanical restoration of the center of rotation, subsidence of the stem and the presence of radiolucent lines.

**Results:** Follow-up was 55 months.

The average Harris Hip score and Oxford test improved postoperatively.

The average length of the osteotomy was 3.4 cm

The average lowering of the center of rotation was 5.8 cm

The average lengthening of the femur was 2.5 cm

The average time for bone union was 5.5 months.

**Conclusion:** The lowering of the center of rotation requires extensive soft tissue release and sometimes shortening of the femoral diaphysis. The use of small hemispheric cups and use of reconstruction techniques of acetabular coverage is necessary. Shortening osteotomy is often recommended. Deformities of the femur such as excessive anteverision and the narrowed femoral canal advise the use of diaphyseal anchoring stems. Conical Stems provided an excellent primary stability in the distal and the proximal fragment of the femur, avoiding the used of plates or cables to achieve stability at the site of the osteotomy.

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**O10 Complex primary THA 2**

**O10-428**

SURVIVAL AND COMPLICATIONS AFTER COMPLEX HIP ARTHROPLASTY WITH A MODULAR FEMORAL STEM

Sparsa, E. (1); Dujardin, B. (1); Kienraat, K. (1); Waghemakers, R. (1); van den Hout, J. (1); Elmars, L. (1); Bodler, S. (1)

1) Amphia Hospital Sint, Dep, Orthopaedic Surgery, Breda, Netherlands

**Introduction/objectives:** This study aims to evaluate the survival and complications after complex hip arthroplasty, in which a modular femoral stem was needed for reconstruction.

**Methods:** A retrospective cohort study was performed including 134 consecutive patients from January 2007 to May 2014 receiving a Restoration modular femoral stem. Thirteen patients received a modular stem in a primary procedure, because the main reason for complications.

Mid-term survival rate of complex hip arthroplasty with a modular femoral stem was 95.6%. Dislocation was 95.6% (95% CI: 93.9 - 97.4). Complications included 16 dislocations and 4 deep infections for which re-operation was performed in 1, 3, 6 and 12 months. The obtained data was then analyzed using Kaplan-Meyer curve (The value of p<0.05 was considered statistically significant).

**Results:** Statistically significant differences between 2 groups (p<0.05) were established in about 3 and 6 months based on Harris Hip Score and DEXA. Patient in Group B showed higher scores. While at 12 months, there were no statistically differences were noted. Serum 1,25-dihydroxy-vitamin D3 was statistically higher in Group A up to 6 months.

**Conclusion:** All patients with ESRD have comorbidities of different types of renal osteodystrophy including the result of low levels of vitamin D3. Additional local usage of active Vitamin D5 reduces the risk involving aseptic loosening of endoprosthesis and provides increased remodelling of bone autografts, as a result leading to improved Harris Hip Score during the early post-operative period.
Conclusion:

Osteolysis (1 hip).

Results:

Results with endpoint re-revision for aseptic loosening were 85.2% and 80.5%. The 10-year survival with endpoint re-revision for aseptic loosening of the 10 patients (4 hips) were lost to follow-up. All revisions were performed with cemented THA in combination with bone impaction grafting if necessary.

Methods:

A historical prospective study included analysis of the 9 case histories with modular neck fractures carried out from January 1, 2014 to December 31, 2016. The statistical analysis was performed by Microsoft Excel Add-in 12.0.5.

Results:

The average age of the patients was 51.2 ± 11.61 years. The mean follow-up of the primary hips was 81.6 ± 27.11 months. We revised 240 Total hip arthroplasties performed in high dislocated hips (Hartofilakidis Grade III High Dislocation) by one only surgeon with the same approach, trying to figure out how can affect total body length, body mass index, length discrepancy, descending length, osteotomy or not, and amount of femoral resection during the osteotomy, in the appearance and severity of sciatic neuropathy.

Conclusion:

Total hip arthroplasty in chronic high dislocated hip poses real challenges for a hip surgeon because its technical difficulties and possible complications, the most feared, sciatic neuropathy. It is important to evaluate the need of an adequate resection osteotomy, as well as different variables to decrease the incidence of sciatic neuropathy.

Introduction/objectives:

Total hip arthroplasty (THA) is increasingly performed in young patients. Their age at the time of primary THA probably requires one or more revisions, so a durable and preferably biological reconstruction is needed. The purpose of this study was to examine long-term results up to 30 years after primary cemented THA in patients under 30 years and the outcome of subsequent revisions.

Methods:

A historical prospective study of 48 patients (69 hips) younger than 30 years was done, all received primary cemented THAs between April 1988 and May 2004, using acetabular bone impaction grafting if necessary. At review, 2 cemented components and bone impaction grafting, have promising results at 10 years of follow-up.

Conclusion:

The modular necks fractures occurred in patients with excessive body weight and moderate level of physical activity who have an active lifestyle prior primary THR.

Introduction/objectives:

Modular neck fracture in the practice of total hip arthroplasty. The use of modular neck femoral components in total hip replacement has recently increased. The main advantage of it using is easiness of femoral offset optimization. However, sporadic messages about the modular neck fracture appeared in the literature last time. The aim of the study is a clinical analysis of modular neck fracture in patients with total hip arthroplasty.

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O11 THA in young patients

011-534
EFFECT OF SURGICAL APPROACH IN YOUNG PATIENTS ON SHORT-TERM RISK OF REVISION AFTER TOTAL HIP ARTHROPLASTY
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(1) Radboudumc; Nijmegen, Netherlands; (2) Department of Orthopaedics, Radboud University Medical Centre; Nijmegen, Netherlands; (3) Reiner de Graaf HospitaL Orthoped; Department; Delft, Netherlands; (4) Dutch Arthroplasty Register; Landelijke Registratie Orthopedeische Implantaten (LROI); ’s-Hertogenbosch, Netherlands

Introduction/objectives: Total hip arthroplasty (THA) is used increasingly in younger patients. There is no consensus about the best surgical approach for THA, especially in this young patient group. Furthermore, trends in surgical approach are changing, with an increasing use of the anterior approach in the last decade. Therefore, we evaluated the short-term survival rates for different surgical approaches using data from the Dutch Arthroplasty Registry (LROI).

Methods: All patients younger than 55 years with a primary THA implanted in the Netherlands between 2007 and 2016 were selected. All patients who received a THA with a posterior lateral, direct lateral, anterolateral or anterior approach were included (n = 17,015). We determined 1 year survivorship and used multivariable Cox regression ratios for comparison between surgical approaches while adjusting for potential confounders.

Results: Our preliminary results showed no difference between the posterolateral (HR = 1.74, CI = 0.99 - 3.07) and direct lateral approach (HR = 1.50, CI = 0.81 - 2.78) compared to the anterior approach in risk of revision after 1 year follow-up. The anterolateral approach resulted in a significantly higher risk of revision after 1 year (HR = 2.45, CI = 1.24 - 4.84) compared to the anterior approach.

Conclusion: We found an increased risk of revision in THA using the anterolateral approach in young patients. However, there was no difference in risk of revision between the anterior, posterolateral and direct lateral approach 1 year after surgery.

011-548
TOTAL HIP REPLACEMENT VERSUS HIP ARTHROSCOPY, WHICH ONE OFFERS MORE PREDICTABLE CLINICAL RESULTS?
Fernandez-Torres, E. (*) ; Collado-Escudero, C. (1); Guzman-Domenech, D. (1); Marin-Pena, O. (1); Abdi-Ei-Radi, M. (1); Larratcort-Garijo, R. (1)
(1) University Hospital Infanta Leonor, Madrid, Spain; (2) Asiat University Hospital, Asiat, Egypt

Introduction/objectives: Surgical management young adult with hip pain range from Preserving Surgery to Total Hip Arthroplasty (THA). Traditional clinical hip scores does not examine good from excellent results in this population. Aim of our study was to assess the clinical results of hip surgery using a specific hip score (HOATT) for young active patients.

Methods: We developed a retrospective descriptive study of a cohort of 80 patients younger than 55 years. The patients were divided into two groups: hip arthroplasty or arthroscopic hip surgery. Demographic and surgical technique data were collected. For the clinical assessment, we used the HOATT scale preoperatively and one year after the hip surgery. For the descriptive analysis, it was used Chi square test and non-parametric tests, supported by SPSS Statistics (significant p < 0.05).

Results: Of the cohort of 80 patients, 43 underwent THA and 37 underwent hip arthroscopy. In the THA group (43 patients), 28 were male (65.1%) and the mean age was 44.4 years. The average HOATT score preoperatively was 18.9, while the postoperative at one year was 72.2. Therefore, an increase of 53.4 points was obtained with THA. The mean age at the arthroscopy group (37 patients, men 64.4%) was 39.9 years. The mean preoperative HOATT score was 30.97 and the postoperative 65.23 at one year. The increase in this group was 31.19 points. The comparison of the HOATT improvement between both groups showed statistically significant differences (p < 0.05).

Conclusion: In our series of young patients, the clinical improvement one-year postoperatively is greater in THA surgery versus preserving surgery (p < 0.05). Both options improve the quality of life of our young patients but more predictable results were obtained with total THA.
111 THA in young patients

111-59

TOTAL HIP ARTHROPLASTY IN YOUNG PATIENTS IN THE NETHERLANDS: TREND ANALYSIS OF >19,000 PRIMARY HIP REPLACEMENTS IN THE DUTCH ARTHROPLASTY REGISTER

Kuipers, M. (1); Harvink, G. (2); Van Steenberghe, L. (3); Schurkes, B. W. (1)
(1) Radboudumc, Nijmegen, Netherlands; (2) Department of Orthopaedics, Radboud University Medical Centre, Nijmegen, Netherlands; (3) Dutch Arthroplasty Register, Landelijke Registratie Orthopedische Implantaten (LROI), ‘s-Hertogenbosch, Netherlands

Introduction/objectives: Total hip arthroplasty (THA) is one of the most successful interventions in medical care. Outcome of THA in younger patients (<55 years) is still inferior when compared to older patients. Because of shifting trends in THA, and failure rates being higher in younger patients, we aimed to assess trends in implant characteristics in the last ten years in patients younger than 55 years old in the Netherlands using the Dutch Arthroplasty Register (LROI).

Methods: Data were divided in subgroups for year of surgery and age. Chi-square trend test was used to analyze differences between year of surgery and age groups.

Results: Between 2007 and 2017 a total number of 19,915 primary THA were performed in patients <55 years. Osteoarthrosis was the most prevalent diagnosis (46.1%). The total number of THA performed increased with 25% between 2012 and 2017. Uncemented fixation was used in 79.5% of all performed THAs. A trend towards a head diameter of 32 mm was present, where ceramic-on-polyethylene is becoming the most frequent used bearing type. Posteroslateral surgical approach was used the most in young patients, but an anterior approach is used increasingly. Ceramic-on-polyethylene, 32 mm head diameter and an anterior approach were used significantly more in older patient groups.

Conclusion: There was a clear preference for uncemented fixation in young patients. In head diameter, bearing type and surgical approach clear trends were visible. Characteristics of THA in young patients were subject to changing perspectives, and differed with age.

O12 Hip arthroscopy 1

O12-519

THE IMPACT OF ROUTINE CAPSULAR REPAIR IN COMPETITIVE SPORTSMEN UNDERGOING ARTHROSCOPIC CORRECTION OF FEMORO-ACETABULAR IMPINGEMENT: CASE-CONTROL STUDY WITH 2 YEAR FOLLOW-UP

Carton, P.* (1); Pian, D.* (1); Domb, B.* (2); Lall, A.* (3); Laseter, J.* (2); Mohr, M.* (3); Parels, I.* (3)
(1) The Hip and Groin Clinic, Whitfield Clinic Medical Centre, Waterford, Ireland
(2) American Hip Institute, Hinsdale Orthopaedics, Westmont, United States
(3) American Hip Institute, Hadassah-Hebrew University Medical Center, Westmont, United States

Introduction/objectives: To evaluate whether routinely repairing the hip capsule in competitive athletes undergoing arthroscopic correction of symptomatic femoroacetabular impingement yields improved and sustained functional outcomes.

Methods: Competitive athletes between 2009-2015 were assigned to one of two groups based on whether capsular repair was performed as part of their index hip arthroscopic (HA) procedure. Exclusion criteria was Tomlin Grade 2a - 4b years, previous surgery, labral excision and other underlying hip conditions. Patient-reported outcomes (HHS, UCLA, SF-36 and WOMAC) were completed pre-operatively and minimum 2 years post-operatively. Range of movement was assessed with a hand-held goniometer. Incidence of subsequent revision surgery between groups was analysed.

Results: 697 consecutive athletic cases were included: 349 in Group A (No Repair), 348 in Group B (Repair). Average age over 25k5yrs (15.4 - 39.3). There was no significant difference between groups for any patient-reported outcome measure with both groups significantly improving from pre-operative baseline (p<0.001). No cases in either group required conversion to THR; 22 cases (7%) in Group A required a repeat HA compared to 15 cases (4.8%) in Group B within 2 years following index procedure however this was not statistically different (p=0.580). Group A had a greater mean internal rotation range (34° vs 30 7.7°) compared to those with a repaired capsule (mean 27±52 6.8°) (p=0.02)

Conclusion: Repairing the hip capsule does not lead to statistically superior post-operative outcomes nor a significant reduction in revision HA rates, at 2-years post-operation; Capsular repair limits excessive internal rotation, potentially by restoring the iliofemoral ligament, which may improve hip stability.

O12 Hip arthroscopy 1

O12-308

EFFECT OF CIGARETTE SMOKING ON PATIENT REPORTED OUTCOMES IN HIP ARTHROSCOPY: A MATCHED-PAIR CONTROLLED STUDY WITH MINIMUM 2 YEAR FOLLOW-UP

Domb, B.* (1); Lall, A.* (2); Harmsen-Baest, J.* (3); Gupta, A.* (2); Lasser, J.* (2); Mehr, M.* (2); Parels, I.* (2)
(1) American Hip Institute, Hadassah-Hebrew University Medical Center, Westmont, United States; (2) American Hip Institute, Westmont, United States; (3) American Hip Institute, Hadassah-Hebrew University Medical Center, Westmont, United States

Introduction/objectives: The rate of hip arthroscopy has increased; however, there is limited literature examining patient reported outcomes (PROs) in smokers.

Methods: From February 2008 to July 2015, data were prospectively collected and retrospectively reviewed to identify patients that smoke at the time of primary hip arthroscopy. Patients were matched 1:2 (smoking: non-smoking) based on patient sex, age within 5 years, labral treatment (repair vs. reconstruction vs. debridement), workers compensation status, and body mass index (BMI) within 5 kg/m2. All patients were assessed pre- and post-operatively with 4 patient-reported outcome measures: modified Harris Hip Score (mHHS), Non-Athletic Hip Score (NaHHS), Hip Outcome Score-Sport Specific Subscale (HOS-SSS), and International Hip Outcome Tool 12 (HOT-12). Pain was estimated on the visual analog scale. Satisfaction was measured on a scale from 0-10.

Results: 75 hips (72 patients) were included in the smoking group and 150 hips (140 patients) were included in the control group. At preoperative baseline, the smoking group had significantly lower PRO scores when compared with the control group for mHHS, NaHHS, and HOS-SSS. Both groups demonstrated significant improvement from preoperative baseline. Minimum two-year follow-up was achieved with an average of 42.5 months for the smoking group and 47.6 months for the control group (p<0.07). At latest follow-up, the smoking group reported inferior results for all scores.

Conclusion: Patients who smoke had lower PRO scores preoperatively and at latest follow-up. Both groups demonstrated similarly significant improvement in all PRO scores. While hip arthroscopy may still yield clinical benefit in smokers, patients who smoke may ultimately achieve an inferior functional status.
102 Hip arthroscopy 1

102-99 ANTERIOR EXTRA-ARTICULAR SUBSINE AND INTRA-ARTICULAR FEMOROACETABULAR IMPINGEMENT DUE TO DECREASED FEMORAL TORSION - A 3D CT IMAGING SIMULATION STUDY
Leach, T. (1, 2); Schmaranzer, F. (3); Steppacher, S. (1); Todorliki, L. (1); Tannast, M. (1); Zheng, G. (1); Siebenrock, K. (1)
(1) Inselspital Bern, University Hospital Bern, Department of orthopedic surgery and traumatology, Bern, Switzerland; (2) STIB, Institute for Surgical Technologies and Biomechanics, Bern, Switzerland

Introduction/objectives: Location of hip impingement in hips with symptomatic FAI combined with decreased Femoral Torsion (FT) is unknown. Therefore, we evaluated symptomatic hip with decreased FT both with and without cam and pincer FAI, using CT-based virtual 2D impingement simulation and questioned:
(1) What is the osseous range of motion of FT?
(2) Where are the osseous femoral and acetabular impingement zones located?
(3) Is impingement extra- or intra-articular?

Methods: We performed a retrospective comparative analysis of 37 hips in 24 symptomatic FAI patients with decreased FT. These hips were compared to 21 hips of 18 symptomatic patients with anterior FAI with normal FT (10.25°) and 26 asymptomatic hips with no FAI and normal FT. This resulted in a total of 84 hips in 69 patients. All FAI patients were symptomatic and presented with anterior hip pain, a positive anterior impingement test and decreased internal rotation during clinical examination. All hips underwent CT scans including the pelvis and the distal femoral condyles. Decreased FT was defined as FT<5°.

Results:
(1) Hips with FAI combined with decreased FT have a significantly lower mean (114° vs 125°, p<0.001) and internal rotation at 90° of flexion (18° vs 32°, p<0.001) compared to the asymptomatic control group.
(2) The maximal acetabular impingement zone for hips with decreased FT was located at the 3rd/third position.
(3) In hips with decreased FT, 95% of the impingement locations were located intra-articular and 32% had a congruent extra-articular subspine FAI.

Conclusion: Hips with FAI and decreased FT have less flexion and internal rotation in 90° of flexion. Hip impingement due to decreased FT is intrarticular combined with subspine FAI. We identified decreased FT as a new cause for anterior FAI.

102 Hip arthroscopy 1

102-250 ENDOSCOPIC TREATMENT APPROACH FOR PROXIMAL HAMSTRING TENDINOPATHY
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Introduction/objectives: Hamstring tendinopathy (HT) can be a very debilitating condition. Pain in the global and ischial region, while running or leading, is the most common symptom. Sometimes a pseudo-acetabular pain is associated. Followed by clinical examination, MRI confirms the diagnosis. Most cases can be dealt with conservative treatment, but in more resistant cases, open or endoscopic treatment can be the solution. This work presents the results of endoscopic treatment of HT, focusing on key technique points, its surgical approach and clinical anatomy.

Methods: We performed a retrospective study in patients with HT treated by an endoscopic approach. The patients were in ventral decubitus and two portals were made to approach the ischium, followed by bursectomy, tenotomy of semimembranosus and its tenotomy to semitendinosus, and sciatic neurectomy. All patients were submitted to VAS, WOMAC and subjective evaluation scales.

Results: The study included 3 endoscopic 2 patients, with 32 and 47 years old, and a 6 and 4y duration of symptoms, respectively. Follow-up of 1 year in both cases. Mean VAS improved from 8.5 (7.1 - 10) to 2 (2 - 2), and WOMAC from 46.4 (37.3 - 63.5) to 81.1 (73.6 - 88.7). Subjectively both patients were satisfied with the procedure.

Conclusion: In the recent years HT has gained increased recognition. Conservative treatment remains the mainstay approach, but if it fails to resolve the symptoms, surgery is advocated. We believe endoscopic treatment should be considered over the open procedure. It offers the advantage of minimal invasiveness, low morbidity and equal results, allowing the same surgical gestures: ischial bursectomy, hamstring tenotomy and tenophagy and sciatic neurectomy.

102 Hip arthroscopy 1

102-593 TRACTION FORCE FOR PERIODOPERATIVE HIP DISLOCATION IN HP ARTHROSCOPY
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Introduction/objectives: During hip arthroscopy it is necessary to apply traction force to widen the joint space. Main goal of our study was to measure the amount of force needed to widen the hip joint. Second goal was to analyze if there is a reproducible relation between this force and the amount of joint space widening.

Methods: The periperoative traction force was measured in 27 patients (24 female, mean age 41) during hip arthroscopy. Four measurements were performed during arthroscopy: one before the procedure, one after releasing the vacuum seal and one after capsulotomy. The widening of the joint space was measured with fluoroscopy and a steel bullet for calibration.

Results: The median traction force before arthroscopy was 750N (range 390-1362). The median traction force after vacuum seal release lowered to 496N (range 113-760) (p=0.001) and to 452N (range 63-758) after capsulotomy (p=0.001). Median joint space widening was 8.6mm (0.4-13.7). Correlation between traction force and joint space widening was 0.13.

Conclusion: A median traction force of 750N was needed to acquire 8.6mm of joint space widening. This traction force was significantly lowered by almost 25% after release of the vacuum seal of the hip and around 20% after additional capsulotomy, without loss of joint space narrowing. No correlation between traction force and joint space widening could be found.
O13 Patient management 2

O13-281
FEASIBILITY AND PATIENT EXPERIENCE OF A HOME-BASED REHABILITATION PROGRAM DRIVEN BY A TABLET APPLICATION AND MOBILITY MONITORING FOR PATIENTS AFTER A TOTAL HIP ARTHROPLASTY

Methods: Patients were assigned to a home-based rehabilitation program after Total Hip Arthroplasty (THA) driven by means of a tablet PC and a necklace-worn motion sensor to continuously monitor mobility-related activities.

Results: Thirty-two patients aged 18-75 who received a THA as treatment for primary or secondary osteoarthritis (OA) were included. Patients followed a 10-week exercise program with video instructions on a tablet PC and daily physical activity registration through a motion sensor. Patients were asked to do strengthening and walking exercises at least five days a week. There was weekly phone contact with a physiotherapist. Adherence and technical problems were recorded during the intervention. User evaluation was done in week 4 (T1) and at the end of the program (T2). Descriptive statistics were used to describe the data.

Conclusion: A home-based rehabilitation program driven by a tablet application and mobility monitoring seems feasible for THA patients. Adherence was good and patient experience was positive. The novel technology was well accepted. A home-based program could be an alternative for formal physiotherapy.

O13 Patient management 2

O13-315
PREOPERATIVE CHRONIC OPIOID USE AND VALUE-BASED OUTCOMES IN TOTAL HIP ARTHROPLASTY

Methods: A retrospective analysis on 256 consecutive patients who underwent a THA at our institution between February 2016 and June 2016 was performed. Two cohorts were involved in the study: THA patients who were deemed preoperative chronic opioid users and those who were not. Data on patients’ opioid use histories 3 months prior to surgery and 6 months following surgery were collected using the state’s prescription monitoring program. Variables that were compared between the two groups included baseline characteristics, as well as quality metrics.

Results: Of the 256 patients, 54 (21.1%) patients were identified as chronic opioid users. The chronic users had a significantly higher prevalence of private insurance while the non-chronic users had a higher prevalence of worker’s compensation insurance (p=0.001). Discharge disposition, value-based purchasing (VBP) costs, length of stay (LOS), emergency room visits, and postoperative office visits were similar between the two cohorts. Readmission rates, 30-day (p=0.031), 90-day (p=0.043), and 6-month (p=0.048), were significantly higher in the chronic opioid users cohort.

Conclusion: The current study demonstrates that a substantial proportion of preoperative chronic opioid users continue to consume large amounts of opioids up to 6-months following THA surgery. Furthermore, preoperative chronic use is significantly associated with poorer quality outcomes, specifically with respect to readmission rates.

O13-362
THE MEDIAN LOCAL ANESTHETIC DOSE (MLAD) OF INTRATHecal Bupivacaine and Intrathecal Prilocaine in Total Hip Arthroplasty with the Anterior Supine Intermuscular Approach

Methods: Two prospective dose finding studies were conducted in which the MLAD of bupivacaine and the MLAD of prilocaine in TIA with ASI approach were studied using the up-and-down sequential allocation model as described by Orme and Mason. The mean surgery time for THA with ASI approach in 2014 was 88 minutes and the 95th percentile was 104 minutes. To allow bupivacaine and prilocaine to reach a sufficient nerve blockade, we added respectively 15 and 50 minutes to the 95th percentile of the mean surgery time. The dose requirements for the succeeding patient were directed by the outcomes of the preceding patient. An inadequate dose of bupivacaine led to a 0.5 mg dose increase, whereas an adequate dose led to a 0.5 mg dose decrease. In the prilocaine study an inadequate dose led to a 5 mg dose increase, whereas an adequate dose led to a 5 mg dose decrease.

Results: The MLAD for bupivacaine was 5.7 mg (95% CI 5.0-6.1). Three patients reported pain at the end of the surgery, varied between a dose of 4.0 and 5.0 mg. The MLAD for prilocaine was 52.9 mg (95% CI 32-83.8). Thirteen patients reported pain during surgery, varied between a dose of 40 and 60 mg.

Conclusion: The dose of prilocaine used for spinal anesthesia during THA with ASI approach might be reduced. The use of prilocaine during THA with ASI approach is not recommended.

O13-396
ASPIRIN AS DVT PROPHYLAXIS IN TOTAL HIP ARTHROPLASTY

Methods: In a Prospective series of consecutive 1000 THA patients between January 2014 to January 2017 we used Aspirin as the only prophylaxis regimen against VTE. Patients with major risk factors for VTE were excluded. There was no mechanical prophylaxis in our patients, patients immediately started to ankle pumping after completion of anesthesia and were ambulated as tolerated weight in same day of surgery or the day after surgery. Hemoglobin (Hb) concentration preoperatively and post operation day (POD) 1 and 2 were calculated as an indication of blood loss. All operations were done through minimally invasive direct anterior approach. Routinely we use no suction drain in our patients.

Results: There are 5 cases (0.5%) of clinically symptomatic VTE. No hematoma formation requiring surgical drainage observed in our patients. There were 18 sound bleeding POD 1 to 3 requiring dressing change. Mean Hb concentration reduction were 7g/L (4-10g/L) and no patient required blood transfusion

Conclusion: Considering enormous potential of Aspirin in reduction of symptomatic VTE as recommended by AOSS and ACCP guidelines and in light of very low cost of Aspirin we recommend routine Aspirin usage as 1st time chemoprophylaxis against VTE except in patient with major risk factors for example those with history of previousVTE.
013 Patient management 2

013-514
YOUNG PATIENTS WITH HIP PATHOLOGY: HOW TO IMPROVE PSYCHO-SOCIAL PROBLEMS IN DAILY LIFE van der Veer, N.1; Schreurs, B. W.2; Ripen, W. H.C.2
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Introduction/objectives: Patients under 40 with hip pathology experience different problems in daily life compared to older hip patients. Besides physical problems like pain and stiffness of the joint, these young patients also face limitations on the psycho-social and emotional aspects in daily life. These problems are correlated to the life phase they are in. However, there is limited information about these experienced non-physical problems.

Methods: In this prospective study, primarily inductive analysis was performed by daily practice observation. These observations showed that different but specific problems in variable dimensions were experienced. Next, 30 patients answered a survey about experienced psycho-social problems in daily life caused by hip pathology. Deductive analysis was performed by organizing a focus group for member checking. Collected data were evaluated. Topics were discussed more in detail and interventions were determined. These interventions were executed and subsequently evaluated in a second focus group.

Results: During outpatient visits, patients went to discuss medical issues but also their psycho-social problems. Some sensitive subjects, like sexuality, are not easily mentioned. Young patients need patient-specific information about their personal situation to manage their expectations. Contact with peers and sharing experiences is seen as valuable, for example on a forum, by telephone, mail, or in real life.

Conclusion: Young hip patients have specific needs and expectations on psycho-social aspects. They want to be seen as an unique young person, with specific needs and expectations. This must and can be integrated more specific in daily healthcare practice to provide guidance in experienced daily life problems caused by hip pathology.

013 Patient management 2

013-444
COMPARISON OF SUTURES VERSUS STAPLES IN SURGICAL WOUND CLOSURE AFTER TOTAL HIP REPLACEMENT Taherianzadeh, A.1,2; Salsali, F.3
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Introduction/objectives: Both sutures and staples can achieve the basic goals of wound closure widely and endeavour to re-approximate the skin by creating a watertight, tension-free non-inverted opposition of the edges. There are various studies with conflicting results regarding the efficacy, economical, rate of complications and cosmetic outcomes achieved when comparing these two closure methods for a variety of applications. In this study we evaluated the efficacy of this two methods.

Methods: In this RCT 637 patients underwent THA during 2015-2016 were randomly assigned to skin closure with staples (n=317) or skin closure with sutures (n=320) groups. Vancouver Score and Hofland wound evaluation score was evaluated for each patient. Data were entered in SPSS software ver 16.0 and analyzed. P value lesser than 0.05 considered as significant.

Results: The patients aged 51±13 years. Number of patients with wound complication was 65 patients (10.32%) after six-week follow-up which had no difference between staples and suture closure (RR=0.49, C. I. 0.34-1.29). The mean of Vancouver Score and Hofland wound evaluation score was not significantly different between two groups (P=0.05). Time to closure in wounds was shorter in staple group (means: 5.3 min, C. I. 2.3-8.4) than the nylonsuture group (mean= 14, C. I. 6.5-17.5). Pain was more in staple group rather than nylonsuture group by VAS score (mean 4.5 versus 3.2).

Conclusion: This study suggests that 10.2% of patients report a wound complication with no difference between sutures and staples. It was demonstrated that suturing skin requires more time and staples are more painful to remove. However, there are no significant difference in use.

014 Dual mobility cups

014-51
CEMENTLESS DUAL MOBILITY CUPS AND BONE GRAFT FOR RECONSTRUCTION OF ACETABULAR DEFECTS Ebied, A.1; Maran, S.2; Saaed, H.1; Elsed, A.1; Hary Salim, A.1
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Introduction/objectives: Dual Mobility (DM) Total Hip Arthroplasty (THA) is a good alternative in difficult revisions with high rates of postoperative dislocations. This prospective study was designed to record a- the outcome of cementless revision DM cups b- the success rate of cementless cups combined with bone allograft as a construct in massive acetabular defects.

Methods: 29 hips with massive acetabular defects were prospectively evaluated. Segmental superior and posterior acetabular defects were reconstructed using bulk fresh frozen allograft, while bone ships were impacted into the cavitory defects. Cementless porous and hydroxyapatite coated DM cups (Novae E or Coptos, SERF, France) with primary interference fit in addition to screw and peg fixation were employed in all patients. The modified Harris Hip Score and radiological evaluations were recorded. Cup position, stability and bone ingrowth at the cup-bone interface were evaluated. Wilcoxon test was used to compare pre to latest follow-up results.

Results: acetabular defects grade IIb to IIIb (Papposki’s) were reconstructed using bulk and impaction grafts. At an average 34 months follow up (minimum 2 years) all cups had evidence of bone ingrowth at the cup-bone interface. No dislocation was recorded. Incorporation of the impacted graft into cavitory defects was observed in 25/29 (86%). The HHS was improved from a mean of 29 pre to 85 points postoperatively (P= 0.001).

Conclusion: Massive acetabular defects can successfully be reconstructed using a combination of cementless cups that incorporate with host bone in addition to bulk graft that maximizes the initial stability. DM articulation is a valuable alternative in difficult revision THA, however, longer term follow up are required.
TOTAL HIP ARTHROPLASTY USING A DUAL MOBILITY CUP FOR DISPLACED FEMORAL NECK FRACTURES IN ELDERLY PATIENTS: A COMPARATIVE STUDY WITH BIPOLAR HEMIARTHROPLASTY USING A PROPENSITY SCORE-MATCHED ANALYSIS

O14-229

Introduction/objectives: With the advent of dual mobility acetabular cups (DMC) and their claims of lower dislocation rates, total hip arthroplasty (THA) using DMC is seeing resurgence in the treatment of femoral neck fractures (FNF). The present study aimed to compare perioperative parameters and early complications, with a focus on the dislocations and postoperative ambulatory capacity, between THA using DMC and bipolar hemiarthroplasty (BHA) in the treatment of displaced intra capsular FNF.

Methods: A total of 264 patients who underwent BHA or THA for FNF were included. After propensity-score matching for age, gender, BMI, preoperative ASA score, Koval’s grade, and Charlson comorbidity index, 71 pairs of THA using DMC and BHA patients with a mean age of 80.6±4.4 years and 79.4 ± 6.6 years, respectively, were identified. The mortality rate, perioperative parameters, dislocation rate, surgical or medical complications, and postoperative ambulatory status of both groups were evaluated.

Results: There was no significant difference in surgery-related complications including infection or reoperation rate between the two groups. Operation time, estimated blood loss, and amount of transfusion were greater in the THA using DMC group. However, THA using DMC had superior outcomes in terms of postoperative ambulatory capacity and mortality (p>0.001 and p=0.015, respectively). Dislocation rates in both groups were similar, with four dislocations in the THA using DMC group and five in the BHA group (p=0.739).

Conclusion: Our study suggests that the use of dual mobility cups may represent an alternative treatment approach that retains the core advantages of THA in elderly patients with displaced FNF.

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O14-477

DUAL-MOBILITY BEARINGS FOR PATIENTS WITH ABDUCTOR-TROCHANTERIC COMPLEX INSUFFICIENCY

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Introduction/objectives: The purpose of this study was to summarize the performance of dual mobility cup systems for revision total hip arthroplasty in patients who had abductor-trochanteric complex deficiency.

Methods: We prospectively followed up 17 patients (20 hips) with a mean age of 63.5 years (range: 33-89 years) who underwent avascular reconstruction with dual-mobility cups for aseptic loosening in 12 hips, infection treatment as second or single stage in 4 hips, and instability in 2 hips. All of the patients had abductor insufficiency. We evaluated the clinical Harris Hip scores (HHS) and radiographs for migration, loosening, and osteolysis. The survival of the components was calculated according to Kaplan-Meier survival rate analysis, and failure was defined as any dislocation and acetabular component and total hip system revision for any reason.

Results: The mean duration of follow-up was 38.1 months (range: 24-98 months). There were 2 (12.5%) repeat revisions for cemented cup migration after 11 months and 19 months. There was no dislocation. At the last follow-up, the mean HHS increased from 42 points preoperatively to 86 points. The cumulative survival rate of the dual-mobility cup system was 93% (95% confidence interval: 83%-100%) at 5 years, with any revision as the endpoint.

Conclusion: Dual-mobility cups may provide excellent stability in patients with abductor-trochanteric complex insufficiency.
Results: Dislocation probabilities were derived from published data. Direct and indirect costs of dislocation, incremental DM cost ($1000), quality-adjusted life years (QALY) values and effectiveness of DM cups for high-risk patients who would be at high risk for dislocation within one year of their index THA.

Methods: A state-transition Markov model with expected-value decision analysis was used to evaluate the cost-effectiveness of DM cups for high-risk patients who would be at high risk for dislocation within one year of their index THA. Direct and indirect costs of dislocation, incremental DM cost ($1000), quality-adjusted life years (QALY) values and dislocation probabilities were derived from published data.

Results: Spine fusion patients were modeled to have a 15% probability of dislocation following primary THA based on published clinical ranges. A hypothetical reduction of 5% in probability of dislocation was deemed clinically plausible with the addition of a DM implant. Under these model parameters, sensitivity analysis was used to identify scenarios for which DM would be cost-effective. For example, if the probability of dislocation is 15% with traditional bearings, then the use of DM is cost-effective if it reduces the dislocation risk to 10% and costs less than $486 (figure 1). However, at its current average selling price ($1000), it would only be cost-effective if it reduces the probability of dislocation from 15% to 7% in this population.

Conclusion: Dislocation is a significant complication and spine fusion patients have been shown to be at high risk. Our results indicate that under specific conditions DM cups are cost-effective for this high risk spine fusion population.

Introduction/objectives: This study seeks to expand our understanding of the cost-effectiveness of dual mobility components as an alternative to standard articulations in this high-risk dislocation population.

Conclusion: This study shows better results in Patient Reported Outcome Measurement with the DAA on function, operating time and length of stay. Differences between the approaches on the total score are minimal, therefore it remains to be seen if the better outcome in DAA is clinically relevant in the rehabilitation process.

Introduction/objectives: Recent publications suggested that the Direct Anterior Approach (DAA) for total hip arthroplasty is associated with more stem revisions compared to other approaches. In addition, lack of adequate data on outcome and complications is emphasized. Many reports are single surgeon series, deal with multiple clinics, use a traction table or included the surgeon’s learning curve. Therefore, we report perioperative and short-term revision data of the DAA performed on a regular table in a high-volume training hospital by surgeons who are beyond their learning curve.

Results: Mean operation time, blood loss and hospital stay were 68 minutes (SD 18), 387 mL (SD 250) and 3.4 days (SD 1.9) respectively. Revision rate for any reason was 2.4%, for dislocation 0.6%, and for aseptic stem loosening 1.4% (uncemented stems) and 0.7% (cemented stems). Intraoperative fracture rate was 0.5%.

Conclusion: The perioperative outcomes and complication rate confirm the DAA as a safe and reliable approach. Dealing with the learning curve may become easier for future surgeons when the DAA is incorporated in resident training programs. Nevertheless, we found the learning never stops, also for experienced surgeons, for both implant system and approach. With the benefits of supine patient position and less tendon or muscle transsection we believe the DAA will continue to gain popularity. However, more data is necessary, especially concerning risk factors for aseptic uncemented stem loosening.

INTRODUCTION

THE INFLUENCE OF DIFFERENT PELVIC SUPPORTS ON CUP INCLINATION ANGLE USING A POSTERIOR APPROACH

Methods: In this prospective study, 200 consecutive patients undergoing primary THA in the lateral abductus position were included. A single support over the pubic symphysis (PS) or a single support over the ischial tuberosity (IT) was used. The angle of the cup was measured relative to the floor (apparent operative inclination, OIa) or was measured. The radiographic inclination (RI) was measured on anteroposterior pelvic radiographs at 6 weeks postoperatively. The target zone for cup inclination was 25°-45°.

Results: In both cohorts the cups were implanted close to the target OIa with an absolute difference with the OIa of 0.86° (±0.2°) respectively. Revision rate for any reason was 2.4%, for dislocation 0.6%, and for aseptic stem loosening 1.4% (uncemented stems) and 0.7% (cemented stems). Intraoperative fracture rate was 0.5%.

Conclusion: The perioperative outcomes and complication rate confirm the DAA as a safe and reliable approach. Dealing with the learning curve may become easier for future surgeons when the DAA is incorporated in resident training programs. Nevertheless, we found the learning never stops, also for experienced surgeons, for both implant system and approach. With the benefits of supine patient position and less tendon or muscle transsection we believe the DAA will continue to gain popularity. However, more data is necessary, especially concerning risk factors for aseptic uncemented stem loosening.

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O15 Surgical approach 1

O15-582
THE DIRECT ANTERIOR VERSUS THE DIRECT LATERAL APPROACH: POSTOPERATIVE RESULTS WITH TWO-YEAR FOLLOW-UP

Introduction/objectives: The direct anterior approach (DAA) uses a nerve- and muscle neutral interval which theoretically should yield better postoperative results compared to the transgluteal direct lateral approach (DLA). A prospective, randomized, controlled trial was conducted to compare the results of these approaches.

Methods: From January 2012 to June 2013 164 patients with end-stage osteoarthritis were randomized to either DAA or DLA. Prior to surgery and at 3, 6, 12 and 24 months a physiotherapist recorded the Harris Hip Score (HHS), a 6-minute walk distance (6MWD) and the Trendelenburg test status. The patients completed the Oxford Hip Score (OHS) and the EQ-5D.

Results: The DAA group had better HHS at all follow-up times, but there was no difference between the two groups at 6 months. The OHS was significantly better in the DAA group at 12 months and 6 months. The EQ-5D index score and EQ-5D-themometer were worse in the DLA group compared to the DAA group.

Conclusion: Both the DAA and the DLA are safe and give good postoperative results, but the number of Trendelenburg positive patients can be greatly reduced by use of the DAA.

O15 Surgical approach 1

O15-590
POSTEROLATERAL OR DIRECT LATERAL APPROACH OF HEMARTHROPLASTY AFTER FEMORAL NECK FRACTURES: A SYSTEMATIC REVIEW

Introduction/objectives: In the Netherlands the posterolateral approach (PLA) and direct lateral approach (DLA) are the most commonly used approaches when inserting a hemarthroplasty after femoral neck fractures. Currently there is no consensus which approach is better for the patient outcome and therefore there is a high variance in practice. The aim of this study was to provide a clear overview of the available evidence in the patient outcomes between patients suffering a femoral neck fracture treated with a hemarthroplasty using the PLA versus the DLA.

Methods: A literature search was conducted in the MEDLINE and EMBASE databases and Cochrane Library. Studies comparing different approaches than PLA and DLA, published before 2000 and reviews were excluded. Language restrictions were set to English and Dutch.

Results: 208 records were identified of which 10 were included. Two studies reported significantly more dislocations in the PLA group, 4 studies found no differences. Infection rate did not differ between the groups. DLA patients were more likely to develop a Trendelenburg and limping. The PLA patients tend to have better quality of life, less pain and more satisfaction compared to the DLA patients. The overall methodological quality of the studies was low. The GRADE scores of the outcomes were very low.

Conclusion: The PLA tends to have more dislocations, but a higher quality of life and less pain. In contrast DLA have less dislocations, but a higher tendency to abductor insufficiency. These results are based on low quality studies. A well conducted clinical trial is needed.

O15-14
SIMILAR SUPERIOR PATIENT REPORTED OUTCOME MEASURES FOR ANTERIOR AND POSTEROLATERAL APPROACH AFTER TOTAL HIP ARTHROPLASTY IN THE NETHERLANDS.

Introduction/objectives: To determine the effect of surgical approach on Patient Reported Outcome Measures (PROMs) after primary THA in the Netherlands.

Methods: We selected all primary THAs performed in 2015-2016, registered in the Dutch Arthroplasty Register. Based on surgical approach, 4 groups were discriminated: anterior, anterolateral, direct lateral and posterolateral approach.

Results: All PROMs and 8 subscales showed a significant improvement over time. Compared to anterior approach, patients in the anterolateral and direct lateral approach reported higher satisfaction. Patients in the direct lateral approach reported significantly better pain relief than patients in the posterolateral approach.

Conclusion: In the Netherlands there is no clear evidence to support the use of a specific surgical approach for primary THA.

O15-83
DIRECT LATERAL APPROACH WITH TROCHANTERIC OSTEOTOMY USING ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE TAPE CAN PROVIDE LOWER DISLOCATION RATE FOLLOWING CEMENTED TOTAL HIP ARTHROPLASTY

Introduction/objectives: In THA through a direct lateral approach with trochanteric osteotomy (Dall approach), UHMWPE tape has been recently applied to tighten the greater trochanter. However, there are still unclear details of outcomes. To clarify the usefulness of this method which can be to prevent postoperative dislocation, we aimed to investigate the frequency of displacements in the trochanter, the cup installation and the dislocation rate.

Methods: We retrospectively enrolled 332 consecutive primary cemented THAs with Dall approach at a mean follow up duration of 4.3 (range, 0.5 to 7.0 ) years, excluding infection and death. The circumferential osteotomy of the greater trochanter fragments were using UHMWPE tapes. The mean age of the patients was 64.5±2.8 years at the time of surgery. We radiographically calculated the ratio of the pelvic vertical height to the distance from the center of the cup to the tear drop, and investigated the dislocation rate. The hips were dichotomized into groups on their radiographs in 6 months after THA: group U with union or displacement in the greater trochanter of 2 mm or less, and group D with displacement of > 2 mm or nonunion.

Results: The ratio of the radiographic measurement was 0.11 in group U (72 hips, 85%) and 0.17 in group D (57 hips)(p < 0.0001). In the case where the ratio was 0.15 or more, 83 hips (30%) were seen in group U and 41 (25%) in group D (p < 0.01). Dislocation was in 4 hips (1.2%) while all were in group D with 0.19 of the ratio.

Conclusion: Although the dislocation rate of cemented THA by this reinforcement is similar to previous literatures, it was suggested that anatomical consideration of the cup placement and union of the greater trochanter were essential for prevention of dislocation.
Conclusion: Fixation appeared satisfactory in all patients, with no migration detected in either component. CTRSA is in process.

O16 New technologies
O16-139
ACCURACY OF ACCELEROMETER-BASED PORTABLE COMPUTER NAVIGATION FOR ACETABULAR COMPONENT ALIGNMENT IN TOTAL HIP ARTHROPLASTY USING ANTEROLATERAL SUPINE APPROACH
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Introduction/objectives: The purpose of this study was to examine the accuracy of acetabular component alignment in total hip arthroplasty (THA) in supine position using an accelerometer-based portable computer navigation system.

Methods: Thirty hips were received THA in supine position using the Direct Anterior Approach HipAlign® navigation system (OrthAlign, Inc., Aliso Viejo, CA). Three-dimensional templating software (ZeeHip, LEXI, Tokyo, Japan) was used for measurement of postoperative cup alignment. The intraoperative navigation and postoperative CT evaluations were compared for the accuracy of cup alignment.

Results: The mean cup alignment were 38.6°±3.1° (33.2 to 47.0°) for the inclination and 12.3°±4.1° (3.2 to 22.3°) for anteverision. Twenty eight of 30 cups (93.3%) were placed within the Lewinnek safe zone. The absolute difference between the portable navigation and CT measurements was 2.2°±0.9° for inclination and 3.3°±5.5° for anteverision.

Conclusion: The accelerometer-based device is a portable navigation system for THA in supine position that does not require the use of a large computer console. The navigation system could be highly accurate for placement of acetabular component, and decrease outliers in THA.

O16 New technologies
O16-140
AN ANATOMIC CERAMIC CEMENTLESS HIP RESURFACING ARTHROPLASTY
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Introduction/objectives: We aimed to demonstrate the clinical safety of a novel anatomic cementless ceramic hip resurfacing device. Concerns around the safety of metal on metal arthroplasty have made resurfacing less attractive while long-term function continue to make the concept appealing. BioLox Delta ceramic is now used in more than 50% of all hip arthroplasties, suggesting that its safety profile is acceptable. We wondered if a combination of these concepts might work?

Methods: An anatomic hip resurfacing device was developed by our group. Biolox delta components were coated with plasma sprayed titanium and hydroxyapatite. After extensive preclinical testing, a twenty patient safety study was designed. Patients had to be between the ages of 18 and 70. The initial size range was restricted to femoral heads between 46 and 54, representing the common sizes of hip resurfacing. The primary outcomes were clinical safety, PROMs and radiological control. Secondary outcomes include CTRSA and metal ion levels.

Results: 20 patients were recruited, aged 30–69. 7 were women and 13 were men. There were no operative adverse events in their operations undertaken between September 2017 and February 2018. One patient had a short episode of hyperkalaemia after receiving the operation. At 3 months, the mean serum cobalt and chromium levels were almost undetectable at 3 months.

Conclusion: This small study appears to confirm the initial safety of a novel cementless ceramic resurfacing device. The more extensive efficacy study will continue in other European centres.
O16 New technologies

O16-211
TOTAL HIP ARTHROPLASTY USING ROBOTIC-ASSISTED TECHNOLOGY RELIABLY AND ACCURATELY REPRODUCES PLANNED ACETABULAR CUP PLACEMENT, FEMORAL STEM VERSION; COMBINED VERSION; HIP OFFSET AND STEM LENGTH

Jarabek, S. (1); Nozdrz, S. (2); Carroll, K. (1); Barska, S. (1); Thompson, M. (1); Mayman, D. (1)
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Introduction/objectives: Robotic technology may help the surgeon with accurate total hip arthroplasty (THA) reconstructions.

Methods: 20 patients underwent a THA that were planned using preoperative CT scans and the robotic arm-assisted software. Pelvic and femoral bone models were constructed by segmenting both preoperative and postoperative CT scan images. The preoperative anatomic landmarks were used on the system matched to the postoperative 3D reconstructions of the pelvis. The postoperative bone model was registered to the preoperative bone model using an iterative closest point algorithm.

Results: Overall hip reconstruction from the intraoperative numbers obtained from the robotic arm-assisted system were accurate with the deviation from the executed overall hip length and offset being 1.6±2.9mm and 0.5±3.0mm respectively. Combined anteversion was similar and correlated to intraop measurements and postop CT measurements (32.5±5.9 degrees vs 32.2±6.4 respectively; p=0.05;p=0.001). There was a significant correlation between intraop cup inclination and version with postoperatively measured cup inclination (R2=0.62; p<0.001) and version (R2=0.76; p<0.001). Pre and postoperative stem anteversion were significantly correlated (R2=0.64; p<0.001). Placement of hip center of rotation had a mean medial-lateral error (1.07±7.9mm), anterior-posterior error (1.16±8.8mm), and superior-inferior error (5.6±30.3mm) in planned cup placement versus postoperatively CT measured values within 2mm.

Conclusion: This is the first study to look at overall hip reconstruction using robotic arm-assisted system. The overall hip reconstruction obtained intra-op room using robotic assistance accurately correlated with the postoperative independent CT measurements using three-dimensional modeling.

O16-448
OPEN LATERAL RECONSTRUCTION IMPROVES OUTCOMES IN FEMOROACETABULAR IMPINGEMENT AFTER FAILED HIP PRESERVING SURGERY

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Introduction/objectives: Although hip arthroscopy (HA), has gained popularity in the treatment of femoroacetabular impingement (FAI), clinical failures requiring reoperation still occur. The purpose of this study is to report clinical and radiographic outcomes in patients undergoing open lateral reconstruction via Surgical Hip Dislocation (O/L-SHD) after failed HA.

Methods: In a retrospective review of all hip surgeries in single center from January 1st, 2019 to September 30th, 2020 we identified 18 O/L-SHD procedures. History of HA and demographic data including age, gender, race, body mass index (BMI), American Anesthesiology Society (AAS) score, and side of procedure were collected. Pre- and post-operative Harris Hip Scores (HHS), modified Merle d'Aubigne (MMD) scores, and Tönnis osteoarthritis grade were collected. Simple linear regression analysis was performed for all individual demographics and history of HA for pre- and post-operative HHS, and MMD scores. Sub-analysis was performed using a multivariable logistic regression while controlling for individual variables.

Results: Patients with a history of HA had significantly lower pre-operative HHS (p=0.044), and significantly greater overall improvement of HHS (p=0.039) and MMD (p=0.017) scores, from baseline, after undergoing O/L-SHD. There was no difference in preoperative BMI, nor post-operative HHS and MMD scores.

Conclusion: Patients with a history of HA had significantly lower pre-operative HHS scores, and significantly greater overall improvement of HHS and MMD scores after open lateral reconstruction via surgical hip dislocation compared to those without failed prior HA.

O16-479
A NOVEL METHOD OF IDENTIFYING NERVE INJURY DURING TOTAL HIP ARTHROPLASTY

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Introduction/objectives: Anterior Root Muscle Response (ARMR) is a new and noninvasive intraoperative neuromonitoring technique. The aim was to analyze ARMR of sciatic and femoral nerves of patients who had undergone total hip arthroplasty (THA).

Methods: A total of 20 adults (11 males, 9 females; 64±13.87±11.9 and 4.4±6.7) have been monitored using bilateral ARMR and free-run electromyography of the sciatic and femoral nerves during four stages of THA was applied with posterior approach (exposure, preparation of the femoral side, preparation of the acetabular side, closure). All the patients received sedation and spinal anesthesia. Latency and amplitude values of ARMR and free-run EMG were recorded from both sides operated and non-operated, and from the same muscles as follows: rectus femoris, vastus lateralis, biceps femoris long-head, iliacus anterior and gluteus maximus.

Results: Preoperative measurements were taken and a mean difference (±2SD) was calculated. Preoperative ARMR measurements were significantly decreased in operated side. Preoperative ARMR measurements were significantly decreased in operated side (p<0.01). Preoperative EMG measurements were significantly increased in operated side (p<0.01).

Conclusion: Preoperative ARMR may have a role in identifying and preventing neurological complication, thus preventing permanent postoperative neurological deficits.

O17 Primary THA 2

O17-371
PREDICTING OFFSET RESTORATION IN SHORT AND CONVENTIONAL STEMS BY USE OF DIGITAL TEMPLATING

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Introduction/objectives: Loss of offset <5mm is associated with altered gait and decreased functional outcome. Some short stems follow the medial calcar, also allowing excellent offset restoration. Conventional stems can have difficulty restoring offset due to diaphyseal anchoring. The aim of this study was to assess whether predicting offset restoration preoperatively differs between a short and conventional stem by use of digital templating. Possible predictors and reliability of measurements were also assessed.

Methods: Hundred standardised hip X-rays for digital templating were used from two ongoing cohorts with a short and a conventional stem. Restoration of offset was dichotomised into “restored” (<5mm) or “lost” (>5mm) and analysed by use of McNemar tests. Multi-level analysis was performed for association between CCD-angle and baseline offset with offset restoration. Bootstraping was performed to determine the optimal cut-off point of the baseline offset for restoration in a ROC analysis. Two observers were for intra-observer reliability and three observers participated for inter-observer reliability.

Results: The mean baseline offset was 79.7mm (range 62.5-113mm) with a mean CCD-angle of 128.6° (range 114.5-146°). The conventional stem could only restore the offset in 72%, whereas the short stem restored the offset in 100%. Only the baseline offset was a predictor. A cut-off point of 81.25mm (95% CI of 80.75-84.75mm) in baseline offset was found where the conventional stem was unable to restore offset. Intra-observer reliability was 0.99 and inter-observer reliability was 0.9 between the three observers for offset prediction.

Conclusion: Short stems seem superior to conventional stems in predicting restoration of offset with a baseline offset of >80mm.
Introduction/objectives: Restoring native hip anatomy and biomechanics are important to create a well-functioning total hip arthroplasty (THA). Hip offset and leg length are regarded as the most important biomechanical characteristics. This study investigated their association with clinical outcomes including patient reported outcome measures (PROMs) and functional tests.

Methods: This prospective cohort study was conducted in 77 patients undergoing primary THA (age 65±11 years). Hip offset and leg length were measured on anteroposterior radiographs of the hip pre and postoperatively. Participants completed the Western Ontario & McMaster University Osteoarthritis Index (WOMAC) and performed functional tests (e.g. gait, single leg stance, sit-to-stand, block step-up) preoperatively and at 3 and 12 months postoperatively. A wearable motion sensor was used to derive biomechanical parameters. Associations between radiographic and functional outcomes were investigated with the Spearman’s rho correlation coefficient. Subgroup comparisons were conducted for patients with more than 15% decreased femoral offset after THA.

Results: Differences in postoperative offset and leg length had little impact on clinical outcomes. Femoral offset subgroups demonstrated no significantly different WOMAC function scores. In functional tests, patients with >15% decreased femoral offset after THA demonstrated more sagittal plane motion during block step-up (14.4° versus 10.6°; p=0.04) while patients with >15% increased femoral after THA demonstrated more asymmetry of frontal plane motion during block step-up (34.05° versus 14.18°; p=0.03).

Conclusion: To create a well-functioning THA, there seems to be a reasonable safe zone regarding the reconstruction of offset and leg length.

O17 Primary THA 2
O17-10
A COPY IS NOT THE SAME AS THE ORIGINAL - ALARMINGLY HIGH RATES OF IMPLANT FRACTURE OF A POLISHED TAPERED FEMORAL STEM

Introduction/objectives: Cemented polished tapered stems have demonstrated excellent long-term outcomes. Based on this concept many companies have entered different varieties of polished tapered stems into the market. The aim of this study was to evaluate implant-related complication of one specific stem design.

Methods: Between 2010 and 2017, 315 total hip replacements were performed using a Fortress stem (Biotechni, La Ciotat, France). Patient records and radiology were retrospectively reviewed for implant-related complications. Five (1.6%) patients sustained a fracture of the neck of the implant after a mean of 55 months. All fractures were atraumatic, originating at the introducer inlet of the stem. All fractured occurred in obese patients (BMI >33) with a small sized prosthesis. Of these there were three 135° and two 125° stems. Fracture risk was 16.7% (5/30) for patients with a small sized stem and a BMI >30. All cases were revised using a cement-in-cement technique or a cementless modular revision stem.

Results: Five (1.6%) patients sustained a fracture of the neck of the implant after a mean of 55 months. All fractures were atraumatic, originating at the introducer inlet of the stem. All fractured occurred in obese patients (BMI >33) with a small sized prosthesis. Of these there were three 135° and two 125° stems. Fracture risk was 16.7% (5/30) for patients with a small sized stem and a BMI >30. All cases were revised using a cement-in-cement technique or a cementless modular revision stem.

Conclusion: A strikingly high rate of early implant fractures was seen using this specific type of cemented stem, in particular when using smaller implant sizes in obese patients. Although based on a proven design, a specific modification (sharp edges of the introducer inlet) led to a stress riser in the neck area, which resulted in a high incidence of implant failure. Due to this finding, the use of this stem can no longer be recommended and it has been abandoned at our institution. This series underlines the importance of a steepened introduction into the market of new orthopedic devices even when based on established concepts.

O17 Primary THA 2
O17-355
PROSPECTIVE COMPARATIVE STUDY OF SMOOTH-SURFACED TITANIUM STEM AND POLISH-SURFACED STAINLESS STEEL STEM FIXED WITH INTERFACE BIOACTIVE BONE CEMENT TECHNIQUE

Introduction/objectives: Excellent results have been reported with cemented total hip arthroplasty (THA) using both smooth-surface and polished-surface stem. However, the superiority of polished-surface over smooth-surface in cemented THA, or vice versa, is still debated.

Methods: Forty six smooth-surfaced triple-tapered Titanium-alloy stem (C) and 46 Exeter stem (T) have been fitted with interface bioactive bone cement (IBBC) technique consecutively in the different period at our institute and prospectively evaluated clinically and radiologically. An area and location of the cortical hypertrophy (CH) were measured in the serial radiograph and compared. All statistical analyses were conducted using IBM SPSS version 21.0.

Results: Mean postoperative follow up period was 12.4 years for C and 10.8 years for T. Pre- and postoperative evaluation using Merle d'Aubigné score were 8.3 and 16.0 points for group C and, 8.0 and 16.3 points for group T, respectively (NS). Laxness, radiocentre line, femoral osteolysis, cement fracture was not observed in both groups. CH was observed in 8 hips of C and in 7 hips of T (NS). CH was observed freely for 4.7 years postoperatively in group C and at 31 years postoperatively in group T. Area of CH has been enlarged in both groups and reached to maximum at 8.7 years postoperatively in group C and at 8.9 years postoperatively in group T. Maximum area of CH was 129.2 mm² in group C and 198.1 mm² in group T (p=0.017). Area of CH decreased until final follow up in both groups. Location of the peak of CH was 101.0° in group C and 85.6° in group T (p=0.017).

Conclusion: Medium-term (minimum follow up: 10 years) result of both stems fixed with IBBC technique was excellent. CH was observed more prominently and proximally in T compared with C.

O17 Primary THA 2
O17-329
THE ASSOCIATION BETWEEN RADIOGRAPHIC AND FUNCTIONAL OUTCOMES AFTER THA

Introduction/objectives: During block step-up (34.05% versus 14.18%; p=0.03). Patient records and radiology were retrospectively reviewed for implant-related complications.

Methods: Between 2010 and 2017, 315 total hip replacements were performed using a Fortress stem (Biotechni, La Ciotat, France). Patient records and radiology were retrospectively reviewed for implant-related complications. Five (1.6%) patients sustained a fracture of the neck of the implant after a mean of 55 months. All fractures were atraumatic, originating at the introducer inlet of the stem. All fractured occurred in obese patients (BMI >33) with a small sized prosthesis. Of these there were three 135° and two 125° stems. Fracture risk was 16.7% (5/30) for patients with a small sized stem and a BMI >30. All cases were revised using a cement-in-cement technique or a cementless modular revision stem.

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Conclusion: A strikingly high rate of early implant fractures was seen using this specific type of cemented stem, in particular when using smaller implant sizes in obese patients. Although based on a proven design, a specific modification (sharp edges of the introducer inlet) led to a stress riser in the neck area, which resulted in a high incidence of implant failure. Due to this finding, the use of this stem can no longer be recommended and it has been abandoned at our institution. This series underlines the importance of a steepened introduction into the market of new orthopedic devices even when based on established concepts.

O17 Primary THA 2
O17-332
EARLY TO MID-TERM RESULTS OF AN UNCEMENTED MODULAR TAPERED FEMORAL STEM IN TOTAL HIP ARTHROPLASTY (THA)

Introduction/objectives: Aim: To assess the clinical and radiological outcome of an uncemented modular tapered femoral stem in revision and complex total hip arthroplasty.

Methods: This retrospective study included 85 patients who underwent Total hip replacement using the implant of interest. 52 were revision THA and 23 were complex primary THA. Out of the 62 revision surgeries, 55 were performed at one stage and 7 were two-stage surgeries (all infected). Indications for revision were; 25 patients had Periprosthetic fractures, 22 had aseptic loosening, 5 had Adverse Reaction to Metal Debris, 2-recurrent instability and 7-periprosthetic joint infectations. Patients were assessed clinically and radiographically at 3 months, 12months and then yearly follow up for osteolysis and subsidence of the stem. Bone loss was classified as per Paprosky classification.

Results: The mean follow up was 3 years (1.0 year - 6 years). 5 patients had a revision of at least one component. One patient had a fracture of the stem, one had a change of proximal body to correct limb length discrepancy, one ended up with excision arthroplasty for deep infection, 2 patients had periprosthetic fracture eventually needing total femur replacement. There were no intraoperative periprosthetic fractures. Post-operative subsidence rate was 15.38%. There were no revisions for aseptic loosening or osteolysis.

Conclusion: Our results show good to excellent survival and satisfactory clinical and radiological outcome of an uncemented modular tapered stem for revision and complex primary Total Hip Arthroplasty.
O18 Surgical approach 2

O18 Surgical approach 2

O18-134

PRIMARY HIP AND KNEE ARTHROPLASTY IN GERMANY AND THE NETHERLANDS: IS THERE A DOWNSIDE EFFECT TO FAST-TRACK SURGERY REGARDING PATIENT SATISFACTION AND FUNCTIONAL OUTCOME? Fossenichert, W.1; Gerhardt, D.; Pauly, T.; Lorenz, F.1; Westergaard, M.; Braun, C.; van Hasselt, J.1; 1Rijnstate Ziekenhuis, Arnhem, Netherlands; 2Rijnstate Hospital, RedwoodMC, Arnhem, Netherlands; 3St. Elisabeth-Hospital, Meerbusch Lady, Germany; 4Katholisches Karl-Leisner-Klinikum, Kleve, Germany; 5Rijnstate, Orthopedics, Arnhem, Netherlands.

Conclusion: 1-stage bilateral THA can be used successfully for patients with bilateral hip disease without increasing the rate of complications. The functional and clinical outcomes are comparable and hospital stay is significantly shorter.

O18-134

BILATERAL TOTAL HIP ARTHROPLASTY: ONE-_STAGE VERSUS TWO- STAGE PROCEDURE Taheriazam, A.1,2; Sassiedin, A.; Safadi, F.1,2; 1Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran, Islamic Republic of; 2Guilan University of Medical Sciences, Rasht, Iran, Islamic Republic of; 3Bone Joint and Related Tissues Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran, Islamic Republic of

Conclusion:

EFFECT TO FAST-TRACK SURGERY REGARDING PATIENT SATISFACTION AND FUNCTIONAL OUTCOME? Godoy Monzon, D.1; Cod Caetaneulu, A.2; Martinez Lotti, G.3; Tursa, L.; Onida, A.1; 1Hospital Italiano de Buenos Aires, Buenos Aires, Argentina; 2Centro Medico Fiz Rey, Buenos Aires, Argentina; 3Grupo Gamma, Rosario, Argentina; 4Hospital Severo Ocho, Leganes, Spain.

Introduction/objectives: Hip (THA) and knee (TKA) arthroplasty protocols differ between Germany and the Netherlands. The Dutch system promotes fast-track surgery whereas in Germany conventional care is provided with a longer length of hospital admission including in- and outpatient rehabilitation. The effect of fast-track surgery compared to conventional care on patient reported outcome measurements (PROMs) and satisfaction was monitored in a prospective study.

Methods: Patients allocated for primary THA or TKA in three German and one Dutch hospital in the border region were included. PROMs were measured pre- and postoperatively at 6 and 12 months including the Oxford Hip Score, Oxford Knee Score, SF12 survey, Visual analog scale for Satisfaction and Pain. Length of hospitalization, type and length of postoperative rehabilitation were recorded.

Results: 663 Consecutive patients were included: 162 THA and 141 TKA in Germany compared to 185 THA and 175 TKA in the Netherlands. Mean length of hospitalization was 11.5 days (range 6 - 25) in Germany, compared to 4.7 days (range 2 - 25) in the Netherlands (p<0.05). In Germany 90% of the patients was discharged with an in - home (89%) or outpatient (21%) rehabilitation program for an average of 3 weeks (SD 0.8), compared to 17% in the Netherlands of 2.4 weeks (SD 1.4) after 1 week postoperatively. No significant differences were measured regarding the PROMs and satisfaction rate with surgery between both countries.

Conclusion: Despite length of hospitalization is significantly longer in Germany including the rehabilitation program, no significant difference was recorded regarding the PROMs nor patient satisfaction compared to fast-track surgery performed in The Netherlands. In conclusion, no downside effect of fast-track surgery was recorded in this study.

O18-134

Introduction/objectives: Despite several studies, controversies prevailed about the rate of complications following one- and two-stage bilateral total hip arthroplasty (THA). In this study, we compared the complications and functional outcomes of one-stage and two-stage procedures.

Methods: 180 patients (ASA class I or II) with bilateral hip osteoarthritis were assigned randomly to 2 equal groups. The 2 groups were matched in terms of age and sex. All of the surgeries were performed through the Harding approach using uncemented implants. In-2-stage procedures, surgeries were performed with 6 month to 1 year interval. All patients were evaluated 1 year postoperatively.

Results: The Harris hip score (HHS) averaged 94.1 and 82.6 in one-stage and 2-stage groups, respectively (p=0.528). The hospital stay was significantly longer in the 2-stage group (9.8 days versus 4.9 days). The cumulative hemoglobin drop and the number of transfused blood units were the same. 1 patient in each group developed asymptomatic deep venous thrombosis but managed successfully. There was no patient with perioperative death, pulmonary embolism, infection, dislocation, periprosthetic fracture or heterotrophic ossification. No patient required reoperation. 2 patients in 1-stage group developed unilateral temporary peroneal nerve palsy, which was resolved after 3 to 4 months.

Conclusion: Despite length of hospitalization is significantly longer in Germany including the rehabilitation program, no significant differences were measured regarding the PROMs and satisfaction rate with surgery between both countries. In-2-stage procedures, surgeries were performed with 6 month to 1 year interval. All patients were evaluated 1 year postoperatively.

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**Introduction/objectives:** Anatomical landmarks for templating of total hip arthroplasty (THA) that are visible both during surgery and on radiographs are rare. If surgery is performed through a direct anterior approach the external obturator tendon (EO) is consistently visible. To use this point as a reference the exact position and dimensions of the footprint need to be known.

**Methods:** CT scans and radiographs of 200 patients were analyzed. The EO tendon was identified on CT scans; the height of its footprint, and its distance to the tip of the greater trochanter and to the anatomical axis of the femur was measured. The accuracy and inter-rater reliability in the identification of the EO footprint was determined.

**Results:** The EO tendon was visible on all CT scans and its footprint was identifiable on all corresponding radiographs. EO's craniocaudal dimension was 6.4±1.4mm. Its distance to the tip of the greater trochanter was 16.0±3.7mm. The EO footprint was located 5.2±3.7mm lateral to the femoral anatomical axis. There was no significant difference regarding the accuracy of EO footprint localization on radiographs among the two readers.

**Conclusion:** The EO footprint on the greater trochanter is consistently visible on CT scans and radiographs. As the variability of the footprint dimension is small, this structure may serve as a useful landmark in THA, particularly when performed through a direct anterior approach.

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**Introduction/objectives:** Sciatic nerve palsy (SNP) after total hip arthroplasty (THA) can be a severe complication, and there are various risk factors for SNP following THA. We conducted a retrospective study to determine the incidence and risk factors for SNP after mini-posterior (MP)-THA.

**Methods:** Primary MP-THAs were performed on 5,230 hips in our clinic and in related hospitals from 2008 to 2017. All implants were cementless. SNP after MP-THA was studied with respect to various factors, and logistic regression was performed to identify the risk factors. Patients with SNP were matched in a 1:1 ratio with patients without pain (control group) on the basis of the year of surgery and gender.

**Results:** SNP after MP-THA was observed in 31 hips (0.59%), and only female patients were affected. There was no significant difference between women and men with respect to SNP (p=0.269). The mean values of the data of the patients with SNP compared to those of the patients without SNP were as follows: age, 58.7 vs. 58.7 years; body weight, 53.4 vs. 57.9 kg (p=0.072); height, 151.8 vs. 159.3 cm (p=0.001); body mass index, 23.2 vs. 23.1 kg/m² (p=0.49); developmental dysplasia of the hip, 27 vs. 30 hips (p=0.304); diabetes mellitus, 2 vs. 2 hips; previous hip surgery, 4 vs. 2 hips (p=0.671); leg lengthening, 13 vs. 15.2 mm (p=0.39); operative time, 58.6 vs. 50.7 minutes (p=0.001); and blood loss, 451.3 vs. 296.5 mL (p=0.014). We found an association between the rate of SNP and height or operative time using logistic regression.

**Conclusion:** In this study, we found that MP-THA had a similar risk of SNP in patients compared with historical controls. This study suggests that a longer operative time may mean more damage to the sciatic nerve.
**O18 Custom implants**

**O19 Custom implants**

**O19 Surgical approach 2**

**O19-118**

FIRST EXPERIENCES WITH THE DIRECT SUPERIOR APPROACH IN TOTAL HIP ARTHROPLASTY van Wiriawijak, P.* (1); Meijering, D.; Elsena, H. (1)

Introduction/objectives: Continuing efforts have been made to improve patient outcomes in total hip arthroplasty (THA) mainly through modifications in surgical technique, implant design and peri-operative protocols. One such modification is the introduction of minimal invasive surgical approaches. Although this may lead to higher complication rates, and a steep learning curve, it facilitates faster recovery and less pain and suffering.

Methods: We compared the short-term results in a cohort of patients with the DSA to a cohort of patients with a standard posterior approach. Operative, radiographic outcomes and complications were analysed retrospectively. In the DSA group we analysed the effect of the operative approach by dividing the group into 4 subgroups over time: DSA 1-31, DSA 32-49, DSA 50-91 and DSA 92-121. We compared operation time, blood loss, complications, length of hospital stay and positioning of the prosthesis in both groups. Data was compared between the two groups using an independent t-test.

Results: Over a period of nine months, 121 patients had surgery using the DSA technique. These patients were compared with a group of 109 patients, who had surgery using the posterior approach in the preceding year. No difference was found between both groups regarding operation time, blood loss, radiographic analysis, length of hospital stay and complications. Moreover, no learning curve was observed in the DSA group.

Conclusion: We consider it safe for an experienced surgeon in the posterior approach to start with this technique after proper training.

**O19-262**

A 3D PRINTED CEMENTLESS MODULAR SHORT STEM FOR MIS THA: RETROSPECTIVE STUDY ON 100 CONSECUTIVE PATIENTS WITH AVERAGE 5.6 YEARS FOLLOW-UP.

Fusco, U.* (1); Boccardo, R. (1); Lod, M. (1); Morese, E. (1)

Introduction/objectives: The aim of this work is to report our experience with a mini stem made by 3D printing. This paper objective is to review this implant clinical performances.

Methods: We reviewed retrospectively 100 consecutive hips operated by the same surgeon between Oct 2010 and Oct 2012. We had 95 patients (56 female and 39 males). In 5 cases a bilateral THA was performed. Mean age was 70 years (Min. 48Y; Max 86Y), mean BMI was 27.6 (Min. 19.5; Max 36.7). Mean follow-up was 5.6 years (Min 4.5Y; Max 8.0Y). We compared the short-term results in a cohort of patients with the DSA to a cohort of patients with a standard posterior approach. Operative, radiographic outcomes and complications were analysed retrospectively. In the DSA group we analysed the effect of the operative approach by dividing the group into 4 subgroups over time: DSA 1-31, DSA 32-49, DSA 50-91 and DSA 92-121. We compared operation time, blood loss, complications, length of hospital stay and positioning of the prosthesis in both groups. Data was compared between the two groups using an independent t-test.

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Conclusion: We consider it safe for an experienced surgeon in the posterior approach to start with this technique after proper training.

**O19-287**

POSITIONING OF IN CUSTOMMADE IMPLANTS BY REVISION HIP ARTHROPLASTY: DO THEY REALLY APPLY AS A "KEY TO THE LOCK"?

Titkow, R.*; Shubnyaev, I. (1); Denzov, A. (1)

Introduction/objectives: Aim of our study was to evaluate the coincidence of custom-made 3D printed acetabular component position to preoperative plan at revision arthroplasty.

Methods: A total of 20 patients with a Paprosky type 2 and 3 defect underwent revision surgery using a custom-made trabecular (lumbar) implant. The planned inclination, anteverision and centre of rotation position of the implant were compared with the post-operative position using CT scans. The coincidence of pre- and post-operative position was considered as a matching all parameters in range 15 degrees for inclination and anteverision and in range 5mm for centre of rotation position.

Results: Five of twenty custom-made implants positions matched with preoperative plan. Most mismatches parameters were centre of rotation lateral displacement (10 cases) and anteverision (9 cases). There were two cases wound debridement in two patients during early postoperative period. There were no acetabular implant position linked complications during postoperative follow-up.

Conclusion: Our results showed that there is high probability of custom-made acetabular implant malposition in revision hip arthroplasty. Only one quarter of acetabular implants was placed within an acceptable range of displacement. In our opinion, main reason is abnormal acetabular anatomy and difficulty of intraoperative navigation. But malpositions didn’t affect on short-term results in our series. The key criteria of acceptable implant position are stable primary fixation, function recovery, percent of complications, osteointegration of implant contact surfaces and long-term survival rate.
**O19 Custom implants**

**O19-137**

PATIENT SPECIFIC 3D PRINTED ACETABULAR CASES AS LAST RESORT

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1. Radboud University Medical Centre, Nijmegen, Netherlands
2. Radboud University Medical Centre, Nijmegen, Netherlands

Introduction/objectives: Especially in older patients with extensive acetabular defects, the surgical treatment of an aseptic loosening of the cup can be very challenging. A patient specific 3D printed implant can then be helpful as a final surgical option for this group of patients. The combination of a patient specific 3D printed case with a bone impaction grafting of the defect under the cage is promising and not well defined yet. We describe our first results and experience at short term with this new implant.

Methods: From September 2016 on, 9 patients were operated. They all had an extensive acetabular defect. 5 patients had a Paprosky 3A defect, 4 patients had a Paprosky 3B defect. At time of surgery the mean age was 74 years (range, 48-81 years). Four patients had a Girdlestone situation at time of revision. For 2 patients it was their first revision, the others already had multiple revisions. Follow-up was prospectively with radiographs/CT scans and PROMS.

Results: At follow up, 1 patient the implant was removed because of a persisting infection after a new revision because of dislocations. Two other patients also had a dislocation; one of them needed additional revision operations. Three patients underwent an antibitic treatment because of possible infections. CT scans showed an adequate position of the implants as pre-operative planned. At short term, PROMS (OHS, VAS pain and VAS satisfaction) improved markedly.

Conclusion: This patient specific 3D printed implant can be successfully used as a last resort for patients with an extensive acetabular defect at short-term follow-up. Surgery is challenging, complications are regularly seen, but in general patients are satisfied. A longer follow-up is needed.

**O19 Custom implants**

**O19-350**

EARLY CLINICAL AND RADIOGRAPHIC OUTCOMES WITH AN ADDITIVE MANUFACTURED POROUS ACETABULAR CUP

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1. Tucson Orthopaedic Institute, Tucson, United States
2. Stryker, Mahwah, United States
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Introduction/objectives: Additive manufacturing technology has been introduced to orthopaedic device design allowing for varying porosity in monotone THA components which better mimics cancellous bone. Study purpose was to determine if additively manufactured cementless porous acetabular cup provides clinical fixation comparable to results seen in current models.

Methods: Laboratory Methods: Test groups (n=9) consisted of 64mm novel shell (Group A) and clinically successful shells (Group B). A straight torque out bar was assembled to the shell dome hole and a linear load was applied with a single axis load frame. Yield moment of the shell-cavity interface was determined. Clinical Methods: 126 primary THAs were performed by 2 surgeons at 2 centers in this prospective trial. LEAS, HHS, HOOS Jr, VAS Pain and VR12 scores were evaluated preop and out to 6 months postop. Zonal radiographic assessment was completed on latest postoperative radiograph.

Results: Laboratory Results: Group A seated lower than group B suggesting good initial fixation. Clinical Results: Functional recovery and pain alleviation was seen in the early postop period. Radiographic review indicated well fixed cups in all cases and good restoration of patient anatomy.

Conclusion: As new orthopedic devices are introduced for clinical use, it is critical to validate bench top findings in a clinical setting. The novel shell provided good time zero fixation and continued short term stability. Additionally, no clinical failures were seen in the 90 day postop period. Early PROMs suggest pain relief and improved physical function as expected in a primary THA population. Long-term results are needed to determine device performance.
Introduction: Aims of the study are to determine whether platelet-rich plasma (PRP) has any role in improving clinical outcomes in patients with symptomatic Greater Trochanteric Pain Syndrome (GTPS).

Methods: A study involving 67 patients with symptomatic GTPS treated with an open mini-invasive technique was conducted. PRP was prepared using a method based on the Järvinen protocol. Clinical improvement was assessed using the Lysholm, Harris, and visual analogue scales (VAS).

Results: The results showed a statistically significant improvement in pain and functional scores in patients treated with PRP compared to the control group.

Conclusion: PRP may be effective in the treatment of GTPS, offering a minimally invasive and potentially safer alternative to traditional surgical procedures. Further research is needed to confirm these findings and establish the optimal PRP protocol for GTPS treatment.
O20 Hip preserving surgery 2
O20-422
GANZ OSTEOTOMY FOR TREATMENT OF HIP DYSPLASIA THROUGH INTRAPELVIC APPROACH
Saied, A. M. (1); Zaghoul, K. (1); Al Ati, W. A. M. (1); Abi El Nas, B. (1)
(1) Mansoura University Hospital, Mansoura, Egypt

Introduction/objectives: Periacetabular osteotomies are technically demanding surgical procedures. It requires wide surgical exposure of the pelvic bones and detachment of muscle insertions. We have developed a modification with minimal soft tissue exposure using transperitoneal approach. The purpose of the study was to review the early results in our group of patients who had this procedure.

Methods: The Ganz PAO was performed on eight painful dysplastic hips, using the modified Stoppa approach through the peritoneal incision. All of the osteotomies were performed under fluoroscopic control and direct visualizing the osteotomy site from the same incision. After the osteotomy, the acetabulum was medialized and redirected anterolaterally, and fixed with screws. Outcome parameters were anterior center-edge angle, the lateral center-edge angle, and the acetabular index angle.

Results: After the osteotomy, the mean anterior center-edge angle had increased from 21.0 degrees +/- 13.9 degrees to 37.1 degrees +/- 13.3 degrees, the mean lateral center-edge angle had increased from 2.9 degrees +/- 12.4 degrees to 28.6 degrees +/- 13.1 degrees, the mean acetabular index angle had improved from 25.4 degrees +/- 9.6 degrees to 11.7 degrees +/- 5.6 degrees.

Conclusion: We believe that periacetabular osteotomy through a modified Stoppa approach, which allows access cuts to be made under direct vision of the quadrilateral surface, can be done with minimal exposure to radiation (fluoroscopy) in a relatively short time. It provides improved femoral head coverage and relief of symptoms in most painful dysplastic hips in adolescents and young adults. Bilateral painful dysplastic hips can be treated with a 10 cm, cosmetically more acceptable incision in the same session using this approach.

O20 Hip preserving surgery 2
O20-263
COMPLICATIONS FOLLOWING MINIMALLY INVASIVE PERFACETABULAR OSTEOTOMY IN A SINGLE SURGEON SERIES
Saheb, S. (1); Groen, F. (1); Keim, K. - R. (1); Hossain, F. (1); Wilt, J. (1)
(1) University College London Hospital NHS Trust, London, United Kingdom

Introduction/objectives: The periacetabular osteotomy is a powerful surgical procedure for correcting asymptomatic acetabular dysplasia, but it carries the potential for significant surgical complications. This study aims to determine the complication profile of PAO as a single surgeon series beyond the learning curve.

Methods: Retrospective review of a prospectively collected database including 224 hips in 201 patients (23 bilateral, 23 males, 201 females). Complication data was collected from notes and radiographic review and graded according to a modified Dindo-Clavien classification. Mean age at surgery was 28.5 years (range 13-48), mean weight was 70.9 (range 45-115), diagnosis was dysplasia in 186 hips, retroversion in 25 and a combination in 13. Median follow up was 20 months (QR 12-30).

Results: Two thirds of hips (151) had no complications. 166 patients (74%) had no complications or a grade 1 complication (one that did not change management). 40 patients (15%) required pharmaceutical interventions (grade II complications). Ten (4%) patients required further unplanned surgical intervention or patient treatment (grade III complications). Eight patients (3.6%) developed grade IV (life or limb threatening) complications including conversion to a total hip replacement. There were no grade V complications (death).

Conclusion: This is the largest single surgeon series with the longest follow up. There is a 7.5% rate of significant complication requiring further surgery or inpatient treatment. Hip replacement was performed at a mean of 30 months post PAO in seven patients and was considered a grade IV complication.

O21 Registries and outcome
O21-241
MORTALITY AND REVISION RATE OF CEMENTED AND UNCEMENTED HEMARTHROPLASTY AFTER HIP FRACTURE: AN ANALYSIS OF THE DUTCH ARTHROPLASTY REGISTER (LRO)
Duijvendijk, Adriaan; Koopmans, Ben K. (1); Wagemakers, R. (1); Bouman-de Winter, L. (1); Van Steenbergen, L. (1); Bolder, S. (1); Mansoura University Hospital, Mansoura, Egypt; (2) Amsterdam Hospital Breda, Netherlands; (3) Almphia Hospital Breda, Dept. Orthopedic Surgery, Breda, Netherlands; (4) Orthopaedics, University College London Hospital NHS Trust, London, United Kingdom

Introduction/objectives: This study aims to evaluate differences in mortality and revision between cemented and uncemented hemiarthroplasties (HA) after acute hip fracture.

Methods: From 2007 to 2017, 24,534 HA procedures from the Dutch Arthroplasty Register were included. For each HA, follow-up until death, revision or end of follow up (11-17 years) was determined. The revision rate was determined by competing risk analysis. Multivariable Cox regression analysis were performed using death or revision as outcome. Age, gender, and body mass index (BMI), ODEP rating, ASA-classification, surgical approach and previous surgery were included as potential confounders.

Results: One-year mortality rates did not differ between cemented and uncemented HA. Nine-year mortality rates were 52.7% (95% CI 51.4-54.0) in cemented HA compared to 56.1% (95% CI 54.3-57.9) in uncemented HA. Nine-year revision rates were 5.9% (95% CI 5.4-6.4) in uncemented HA and 5.0% (95% CI 4.1-6.1) in the cemented HA. Multivariable Cox regression analysis showed that age, gender, BMI and ASA-classification did significantly influence mortality, whereas fixation method, ODEP rating, surgical approach and previous surgery did not. Competing risk analysis revealed a lower nine-year revision rate of 3.2% (95% CI 2.8-3.7) in cemented HA compared to 5.0% (95% CI 4.1-6.1) in the uncemented HA. Multivariable Cox regression revealed a lower hazard ratio for revision (HR=0.58, 95% CI 0.47-0.78) in cemented compared to uncemented HA.

Conclusion: Mid-term mortality rates did not differ between cemented and uncemented HA after an acute fracture. Mid-term revision rates were lower in the cemented compared to uncemented HA.
Introduction/objectives: Total hip arthroplasty (THA) is a successful procedure to treat end-stage hip osteoarthritis. The procedure is increasingly performed in adults of working age (<66 years). These patients wish to return to sports (RTS) and work participation after THA. Return to work (RTW) was reported in 23 studies and mean RTW was 69%. Time to RTW varied from 1-17 weeks.

Methods: We searched MEDLINE and Embase from inception until October 2017. Two authors performed screening and data extraction, including study information, patient demographics, rehabilitation protocols and pre- and post-operative sports and work participation. Methodological quality was assessed using the Newcastle-Ottawa scale. Data on pre-operative and post-operative sports and work participation were pooled using descriptive statistics.

Results: Thirty-seven studies were included, of which seven prospective studies and thirty retrospective studies. Methodological quality was high in 11 studies, moderate in 16 studies and low in 10 studies. RTS was reported in 14 studies. Mean RTS was 104% to the pre-surgery level and 82% to the pre-symptomatic sports level. Time to RTS varied from 16-28 weeks. RTW was reported in 22 studies and mean RTW was 98%. Time to RTW varied from 1-17 weeks.

Conclusion: A great majority of patients returned to sport and work after THA within a timeframe of 28 weeks and 17 weeks respectively. For the increasingly younger THA population, this is valuable information that can be used in the preoperative shared decision-making process.

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Introduction/objectives: This is the first study to evaluate 2 year migration patterns and patient reported hip function after primary total hip arthroplasty (THA) with a C2 stem and Delta-TT cup (LimaCorporate). Reported hip function substantially improved and was not associated with implant migration at 2 year follow up.

Methods: A prospective cohort (n=18, age=55±13 years, 13 female) completed RSA X-rays and Hip disability and Osteoarthritis Outcome Score (HOOS) at baseline, 6 weeks, 3, 6, 12, and 24 months post-surgery. Independent samples t-test and Spearman’s correlation coefficients were used to assess improvement in hip function and its relation with prosthesis migration.

Results: Subsidence of the C2 stem ranged from -0.40-4.91 (median=0.18) mm at 6wk and from -0.32-5.36 (median=0.22) mm at 2yr. Longitudinal rotation ranged from -0.74-4.54 (median=0.52) degrees at 6wk and from -2.16-3.81 (median=0.47) degrees at 2yr. Translation of the Delta-TT cup occurred mostly around the AP-axis, ranging from -0.74-4.83 (median=0.22) degrees at 6wk and from -0.40-3.85 (median=0.20) degrees at 2yr. HOOS-PS scores improved from 49.0±19.5 pre-surgery to 8.33±7.92 at two year follow up (p<0.001). No significant correlations were observed between implant migration and patient reported hip function at 2 year (all R2<0.14).

Conclusion: Migration occurred mainly in the first 6 weeks for the stem and in the first 6 months for the cup, while stabilizing afterwards. This is in line with expectations and seems promising for long-term implant survival. Patient reported hip function substantially improved and was not associated with implant migration at 2 year follow up.

Introduction/objectives: Hip fractures in the elderly are prominent, in The Netherlands about 21,000 hip fractures occur annually. In about 40% of these fractures a hemiarthroplasty (HA) or a Total Hip Arthroplasty (THA) is used. Although these procedures are designed to have less complications than osteosynthesis, complications still occur and are related to mobility, hip pain, and implant failure. Implant failure in THA (i.e. endpoint revision surgery) was performed using the Dutch arthroplasty register (LROI) database as source.

Methods: All patients older than 50 years of age with a hip fracture treated with arthroplasty by orthopedic surgeons and registered in the (national) Dutch arthroplasty register (LROI) were included in the study. In this cohort, patient characteristics and surgical details and end and article number of implants are prospectively collected. Revision surgery and reasons for revision were evaluated. A proportional sub hazard ratio model for revision was created using competing risk analysis with death as competing risk.

Results: One-year revision rate of HA was (CIF (95% CI) 1.6% (1.4% - 1.8%) and 2.4% (2.0% - 2.7%) in THA. Dislocation was the most common reason for revision in both groups (HA 20% THA 41%). Age under 80 years, postinfeclional approach and uncremented fixation were risk factors for revision in both THA and HA. Patients with ASA classification IV-V were revisited more often, whereas revision in the HA cohort was performed more often in ASA I-II patients.

Conclusion: If an arthroplasty is indicated in hip fracture patients, both a postinfeclional approach and uncremented hip prosthesis have higher risks for revision surgery.
Introduction/objectives: Our study aimed to assess the survival and the efficacy of OCL to prevent dislocation following primary and revision THA in high-risk patients with abductor insufficiency at a mid-term follow-up.

Methods: Data were extracted from the Arthroplasty Registry Thessaloniki (ART). We reviewed 30 patients with abductor insufficiency who had a constrained polyethylene insert for primary or revision THA, over a 7-year period, from 2010 to 2017. The patients were reviewed clinically and radiographically. Oxford, Harris Hip and Charnley pain scores were also recorded.

Results: There were six elderly patients, 13 patients with neurologic deficit, 4 DDH patients and seven revision THA with abductor insufficiency. The average age of the patients was 71.4 years. The mean follow-up time was 5.3 (±1.7 years). Twenty patients had a hydroxyapatite- (HA) coated acetabular shell with a constrained insert and 10 had a cemented acetabular component.

Conclusion: The use of a constrained acetabular liner at primary and revision THA in high-risk patients for dislocation can successfully prevent this complication without increasing component loosening at mid-term follow-up.

Introduction/objectives: A demanding challenge for orthopaedic surgeons is the treatment of infected total hip arthroplasty (TJA). This case report describes the management of a patient with a 15-mm infected acetabular cup with a cemented head.

Methods: A 71-year-old man with a history of recurrent septic arthritis underwent two-stage revision surgery using a cemented head and a hydroxyapatite-coated acetabular shell with a constrained liner. The patient was allowed full weight bearing and mobility, and achieving comparable eradication rates in PJI.

Results: The patient was discharged on day 7 with no complications. The patient remained asymptomatic at the 1-year follow-up.

Conclusion: This spacer technique implanted through the DAA represents an alternative to conventional spacers, allowing full weight bearing and mobility, and achieving comparable eradication rates in PJI.

Introduction/objectives: The use of a constrained polyethylene insert at primary and revision THA in high-risk patients for dislocation can potentially determine a subsidence.

Methods: This study retrospectively examined all revision Reclaim THAs between 2013 and 2016. Radiologic assessment compared x-rays at two time points: immediately after surgery and the most recent x-ray available. Leg length discrepancy, subsidence and line-to-line fit was assessed. Significant subsidence was considered ≥10mm. Adequate line-to-line-fit was considered ≥10mm of bicortical contact. Descriptive statistics included clinical factors (i.e. age, Paprosky classification), T-tests, g* and logistic regression were used to analyze data. P values <0.05 were considered significant.

Results: A total of 81 femoral revisions were completed. There were 42 females and 38 males with a mean age of 71 years (range, 46-88). Of these, 6 were revised (dislocation, fracture or infection), and 7 were lost to follow-up. Average follow up time was 18 months (range, 1-46 months). Femoral revisions were classified as Paprosky 3a or 3b. Mean stem subsidence was 4.15mm (range, 0-25.6mm). Subsidence of the femoral stem was <10mm in 88% of patients. A total of 62% of patients had both subsidence <10mm and ≥10mm of bicortical contact. Descriptive statistics included clinical factors (i.e. age, Paprosky classification). T-tests, g* and logistic regression were used to analyze data. P values <0.05 were considered significant.

Conclusion: The Reclaim modular femoral system has demonstrated radiographic stability. Inadequate initial fit is a potential determinant of subsidence.
Case Study: Objectives. The management of periprosthetic femoral bone loss is a challenging problem in hip revision surgery. This retrospective study evaluates the minimum 10-year clinical and radiographic results of the Wagner tapered stem.

Methods: Between September 1992 and March 1998, 68 hips (66 patients) with proximal bone loss underwent femoral revision with use of the Wagner SL Revision® prosthesis. Twenty-six patients (28 hips) died without further surgery. Forty hips were available for clinical and radiographic follow-up assessment at an average follow-up of 13.9 years (range, 10.4-15.8) after surgery. They were 11 males and 29 females, with an average age of 61 years (range, 29-83). A transfemoral approach was performed in 31 cases (75.8%). Bone grafting was never supplemented.

Results: Five stems required rerevision because of infection (2), progressive subsidence (2), and recurrent dislocation (1). Complications included dislocations (5) and subsidence > 9 mm (9). The average Harris hip score improved from 33.0 points preoperatively to 73.3 points at the latest follow-up evaluation (p < 0.001). Thirty-three stems (94.3%) demonstrated radiographic signs of bone ingrowth, and proximal bone regeneration was observed in 22 cases (67.8%). The cumulative survivorships of the Wagner prosthesis at 15.8 years with femoral revision for any reason and stem failure as the end point were 92.0% and 96.6%, respectively.

Conclusions: This retrospective study evaluates the minimum 10-year clinical and radiographic results of the Wagner tapered stem.
**O23 Metal ion release & tribology**

**O23-33**

**INTRODUCTION/OBJECTIVES:** With controversies surrounding Metal on Metal (MoM) total hip arthroplasty (THA), alternate bearing surfaces such as Ceramic on Metal (CoM) had a surge in popularity. However, there are reports of higher than expected rate of revision and elevated serum metal ions and radiolucency (RLL) at mid-term follow-up. The aim of this study was to report functional & radiological outcomes of CoM THAs performed at our institution.

**METHODS:** Patients undergoing CoM THA between 2008 and 2010 were identified and brought back for follow-up in 2017 where up-to-date radiographs, Oxford Hip Scores & Cobalt chromium levels were taken. The primary outcome measure was mean Oxford hip score at follow-up. Secondary outcome measures included serum cobalt chromium levels & revision surgery.

**RESULTS:** A total of 114 CoM THAs were performed on 94 patients with a mean follow-up of 76.8 months (0-120) and a minimum of 58 (42-70). The mean socket size was 24mm (20-26), median femoral head size was 36mm (28-36) & mean inclination was 42.3 (31-61). There was a significant improvement between preoperative & mean follow-up Oxford scores [Preoperative 14.6 (2-36), Follow-Up 45.7 (32-48) p< 0.001]. Of the 83 patients that survived the mean serum metal ion levels above MHRA thresholds.

**CONCLUSION:** Majority of patients with CoM THAs remain asymptomatic and have good functional outcomes at mid-term follow-up. Due to higher than expected serum metal ion levels and presence of RLL, all patients should be followed-up long-term with annual radiographs and serum metal ion levels.

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**O23-35**

**INTRODUCTION/OBJECTIVES:** The effect of bearing type on the outcome of total hip arthroplasty has been extensively studied. However, there is debate on whether alternative bearing surfaces result in increased longevity, is subject to debate.

**METHODS:** Using the Dutch Arthroplasty Register, we identified all patients with a primary THA implanted in the Netherlands between 2007-2016 (n=209,912). Cumulative incidence of revision was calculated to determine differences in revision rate of THAs, using a Cox proportional hazards model. The reference group for comparison was MoPE.

**RESULTS:** CoHXLPE, CoC, and Ox(HXL)PE resulted in a significantly lower risk of revision compared to MoPE [HR=0.7] when accounting for case-mix and confounders these differences were not statistically significant. However, after adjustment for confounders these differences were not statistically significant.

**CONCLUSION:** We found a significant benefit in mid-term cumulative incidence of revision for CoHXLPE, CoC, and Ox(HXL)PE bearings compared to a traditional MoPE bearing surfaces in the Netherlands.
**Introduction/objectives:** Greater trochanteric pain syndrome (GTPS) is associated with lateral pain of the hip and palpation of the large trochanter. It is frequently associated with imaging alterations such as tendinopathy and alterations of the abductor apparatus. The aim of this study is to evaluate the clinical and radiological results of the treatment of GTPS through tenotomy of the proximal third of the large bundle in order to decompress the peritrochanteric space and partial tenotomy of the proximal third of the large bundle in order to decompress the peritrochanteric space and partial tenotomy of the proximal third of the large bundle in order to decompress the peritrochanteric space.

**Methods:** We reviewed 11 patients with GTPS refractory to conservative treatment with at least 6 months of physiotherapy and 1 infiltration with corticoid, operated between 2013 and 2016. An endoscopic approach of the peritrochanteric space was used through the modified mid-anterior portal for visualization and the proximal and distal peritrochanteric portals as working portals. We evaluated the Harris Hip Score (HHS) and the Analogic Visual Pain Score (EVA).

**Results:** All treated patients were women with a mean duration of symptoms of 23 months. The mean age of the patients was 39.7 years. The mean follow-up was 21 months all the patients returned to previous professional activity. The average HHS improved from 59 points preoperatively to 81 points postoperatively. The EVA improved from 5 preoperatively to 2 points postoperatively.

**Conclusion:** Treatment of the GTPS refractory to the conservative treatment and the presence of tendinopathy of the gluteus medius-gluteus with microfractures of the insertion of the gluteus medius and tenotomy of the proximal third of the gluteus maximus to relieve the tension of the peritrochanteric space seems to be an effective treatment.

**O24-491**

**ARTHROSCOPIC TREATMENT OF GREATER TROCHANTERIC PAIN SYNDROME**

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**O24-530**

**THE EFFICACY OF CHEMICAL PROPHYLAXIS IN PREVENTION OF HETEROTOPIC OSSIFICATION (HO) FOLLOWING HIP ARTHROSCOPY**

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**Introduction/objectives:** To assess the early effect of non-steroidal anti-inflammatory medication (NSAID) in the prevention of heterotopic ossification (HO) following primary hip arthroscopy for femoroacetabular impingement (FAI).

**Methods:** A prospective, case-control study was undertaken (January 2016 - October 2017) with patients being assigned to either Group A (no NSAID) or Group B (8-week full compliance with NSAID) following arthroscopic correction of FAI. Exclusion criteria included Tonnis Grade 2+ > 45 years, previous hip surgery and incomplete NSAID compliance. The presence of HO was recorded and classified using the Brooker classification at 6 weeks post surgery. ROM was measured using a hand-held goniometer 3 months post surgery.

**Results:** 198 males and 45 females were included (n=243 cases), mean age 29.3 years (15.8 - 44.7). There was a 27.8% (67/330) incidence of HO in Group A (males 35%, females 7.4%) compared to 10% (31/310) in Group B (males 12%, females 0%). Incidence of HO between groups was highly significant (p=0.001). Group A: Brooker 1 (12%), 2 (13.5%), 3 (2.3%); Group B: Brooker 1 (10%), 2 (10%), 3 (30%). A statistically significant reduction in internal rotation with increasing Brooker score was observed in males overall (p=0.02). Brooker 3 had mean internal rotation of 19.9 ° (SD 9.4) compared to 24.4° (SD 8.7) in cases with no HO (p=0.03). Transient side effects of NSAID therapy were reported in 2.5% (6/308) of patients and included nausea and minor rectal bleeding.

**Conclusion:** A 8-week course of chemical prophylaxis (NSAID) for patients undergoing hip arthroscopy for FAI can reduce the incidence of HO. Higher Brooker score (2 and 3) resulted in a statistically significant reduction in internal rotation, which was considered clinically significant.

**O24 Hip arthroscopy 2**

**O24-383**

**LABRAL LESIONS IN HYPER MOBILITY SYNDROMES. TREATMENT WITH ARTHROSCOPIC SURGERY COMBINED WITH PHYSICAL THERAPY AIMED AT HIP STABILITY GIVES SATISFACTORY RESULTS.**

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**Introduction/objectives:** In hypermobility spectrum disease (HSD) and Hypermobile Ehlers-Danlos Disease (HEDS) labral lesions can exist. The basic problem is the micro instability of the hip joint that can lead to chondral damage posterior in the hip, combined with a ventral lateral lesion. In this study, we described the results of labral fixation combined with post-operative physical therapy.

**Methods:** In a single center cohort study, we analyzed the data of 9 female with HSD and labral lesions. Patients characteristics, IHOT, Beighton score, pre-operative MRI, per-operative findings and the treatment were reported. Follow-up was 1 year.

**Results:** We included 9 females. Three have HEDS and 6 HSD. Mean age 28 years. The Beighton score was >5 in all females. The duration of groin pain was in all cases more than 12 months up to 2 years. The primary treatment was conservative aiming at core-stability training. If the clicking and locking sensation was severe and MRI-arthro was made and showed labral tears at the ventral side. During the arthroscopy mild, chondral damage (grade 1) was seen in the hip, combined with a ventral lateral lesion.

**Conclusion:** In a single center cohort study, we analyzed the data of 9 female with HSD and labral lesions. Patients characteristics, IHOT, Beighton score, pre-operative MRI, per-operative findings and the treatment were reported. Follow-up was 1 year.

**O24 Hip arthroscopy 2**

**O24-260**

**IN SEARCH OF THE SPHERICAL FEMOROPLASTY: CAM OVER-RESECTION LEADS TO INFERIOR FUNCTIONAL 2 SCORES BEFORE AND AFTER REVISION HIP ARTHROSCOPY**

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**Introduction/objectives:** Femoroplasty performed for treatment of cam-type femoroacetabular impingement (FAI) has become a common procedure. The purpose of this study was to examine the effect of accuracy of previous femoroplasty on hips presenting for revision hip arthroscopy.

**Methods:** Data were prospectively collected for patients presenting for revision hip arthroscopy between June 2010 and August 2014. Based on measurements on Dunn view x-rays, cases were divided into three groups: over-resection (OR) where over-resection measured over 5% of the diameter of the femoral head, under-resection (UR) where there was a residual cam lesion (20°- 45°) and neutral. Data collection included modified Harris Hip Score (mHHS), Non-Articular Hip Score (NASH), Hip Outcome Score - Sports Specific Subscale (HOS-SSS), and visual analog scale (VAS).

**Results:** One hundred and thirty hips (120 patients) were included. Twenty hips (15.4%) were classified as OR, 16 (12.3%) as UR, and 94 (72.3%) as neutral. Mean follow-up was 39.6 ± 15.9 months. mHHS and NASH at presentation were 88.2 ± 16.0 and 90.9 ± 14.7, respectively. NASH at minimum two-year follow-up was lower for the OR (86.7 ± 19.1) than for the UR group (88 ± 14.5, p = 0.03). Conversion to THR was more common in the OR than in the UR group (30% vs. 0%, p = 0.024).

**Conclusion:** Cam over-resection of more than 5% of the diameter of the femoral head on the Dunn view predicts worse outcomes after revision hip arthroscopy and higher rates of conversion to THA.
Introduction/objectives: The adoption of hip arthroscopy continues to increase, yet no published evidence exists from which to advise patients regarding their potential for return to work, except in women’s compensation cases. Although physeolysis is commenced immediately post-operatively, with no restrictions to range of movement, patients require time off work to recuperate. We hypothesise that this will vary according to occupation.

Methods: We analysed all cases performed between June 2015 and May 2017 by 2 specialist hip arthroscopy surgeons at a single NHS hospital, with a minimum of 6 months follow-up. Patient demographics, operative indication, and procedure performed were recorded. All patients received a booklet with a suggested rehabilitation protocol, plus weekly visits to a physiotherapist for the first six weeks. All patients were contacted via postal questionnaire for their occupation and date of return to work. 3 groups were then formed, matched for age, sex, and BMI, according to their occupational exertional demands: physical, standing, and sedentary. None involved workers’ compensation cases.

Results: Full data was gained from 93 patients who had undergone hip arthroscopy for femoroacetabular impingement; 63 females and 30 males, average age 38, average BMI 24.8. Patients with a physical job returned to work at an average of 9.45 weeks (range 1-30, median 6), a standing job 7.12 weeks (0.5-26, 6), and a sedentary job 3.52 weeks (0.5-13, 3) (p < 0.001 difference physical to sedentary).

Conclusion: We have provided evidence so patients now be more accurately advised of when they might return to work following hip arthroscopy. Those with a more physical job should expect to take longer than those with a sedentary job.
Introduction/objectives: Evaluate the survival of modular neck THA and analyze the main causes that can lead to their failure.

Methods: We have conducted a retrospective study on all patients operated in our Centre with an exchangeable neck THA, between 1/1/2000 and 31/12/2014. Follow-up has been extended up to 31/12/2015. The cohort includes 1,033 THAs or 961 patients, of which 57.8% were men and 42.2% women. The average patient age is 67.7 years. Looking at the causes for surgery, 80.9% of patients were affected by primary osteoarthritis, 9.0% had a hip fracture, 4.2% reported Congenital Hip Dysplasia or Congenital Hip Luxation, 3.2% had femoral head necrosis, while the remaining 2.7% cases were affected by other diseases. All implants were cementless, apart from 5 cases in which the cup was cemented. Modular necks enclosed in this cohort were only made of Titanium alloy.

Results: Between in those groups were compared using t-test, and possible predictors for CH (including patients’ characteristics and stem alignment) were analyzed using univariate and multivariate statistical methods.

Results: The overall survival rate is 96.4% and the revisions observed are 37. The main causes of the replacement were periprosthetic fractures (12 cases, 32.4%), luxation (9 cases, 24.3%), implant mobilization (7 cases, 18.9%) and implant breakdown (6 cases, 16.2%), of which 3 referred to neck. We had a neck breakages rate of 0.29% and a rate of revisions due to luxation of 0.04%, very low compared to the results reported in the literature. We also did not observe any case of femoral neck compression or metallosis. We believed that this could be attributed to the exclusive use we made of Titanium alloy exchangeable necks.

Conclusion: Our clinical experience together with the low level of complications and high survival rate shown in this retrospective study seems to support the use of exchangeable necks in THA.


Methods: 51 patients were randomly assigned to receive either an uncoated or a HA-coated femoral component during total hip replacement. RSA images were obtained direct postoperatively and at 6 weeks, 3, 6, 12, 24 and 60 months. HOOS scores were obtained preoperatively and at final follow-up. Translations and rotations of the hip stem were calculated according to RSA guidelines.

Results: The main outcome, the MTPM (Maximal total points motion) showed no significant difference between the two groups at 60 months (1.66 versus 1.12 mm). PROMS showed no difference between the groups.

Conclusion: The migration measured with MTPM shows no significant difference between the groups. We conclude that adding HA to a Zweymüller type stem as tested has no positive impact on the long term outcome.
**O25 Primary THA 3**

**O25-466**

ONE-OR-TWO-STAGE BILATERAL TOTAL HIP ARTHROPLASTY - CLINICAL RESULTS

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Introduction/objectives: Total hip arthroplasty (THA) is one of the most successful orthopedic surgeries performed in the last decades. However, there is always a discussion about a one-stage or a two-stage procedure in patients with bilateral osteoarthrosis. The objective of this systematic review is to compare simultaneous bilateral with staged bilateral total hip arthroplasty.

Methods: A meta-analysis was performed with keywords of systemic complications, surgical complications, clinical outcome, and other periprosthetic data associated with 1- and 2-stage bilateral THA.

Results: There were only a few studies who underwent 1-stage bilateral THA compared to 2-stage bilateral THA. One-stage bilateral THA had a lower risk of major systemic complications, less deep venous thrombosis, and shorter operative time compared with 2-stage bilateral THA. There were no significant differences in pulmonary embolism, death, cardiovascular complications, infections, minor complications, and other surgical complications between procedures.

Conclusion: One-stage bilateral THA was superior to two-stage bilateral THA in terms of major systemic complications, deep venous thrombosis, and surgical time compared with 2-stage bilateral THA. However, a careful patient selection is necessary.

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**O25-540**

PRIMARY TOTAL HIP ARTHROPLASTY WITH SHORT EXETER STEMS. CLINICAL FOLLOW-UP AND IMPLANT SURVIVAL AFTER 10 TO 15 YEARS.

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Introduction/objectives: Primary THAs with short Exeter stems are used in small patients, but also in patients with narrow femoral canals and abnormal hip anatomy. The use of short stems also preserves femoral bone stock. This can be important in young patients who probably face multiple revisions in the future. If remants unclear whether short stems are more vulnerable for early loosening or stem fracture, especially in heavy patients. Long-term results are not widely published. We investigated long-term outcome, complications and survival of short Exeter stems in primary THA in a mainly Caucasian cohort.

Methods: We retrospectively analyzed 211 patients (257 hips) who underwent a primary THA using a short Exeter stem. We analyzed complications and performed a Kaplan-Meier analysis for revision free survival with multiple endpoints for all cases. Fifty-two patients (7% hips) with a minimal follow-up of 10 years (10-22 years, mean 14 years) were included for clinical and radiographic assessment.

Results: Stem survival was 99% at 15 years for revision for all causes and 99% for aseptic loosening. In 75 cases with long-term follow-up, the Harris Hip Score improved from 46 preoperatively to 78 at final follow-up (p < 0.01). Oxford hip score improved from 21 preoperatively to 35 (p < 0.01). Sixty-nine (92%) stems had a Barrack A cementation and 6 (8%) a Barrack B. Mean subsidence was 1.5 mm, 8.0 mm. We observed one periprosthetic fracture (Vancouver B1) and three transverse stem fractures at the level of the lesser trochanter in 35.5-mm offset stems.

Conclusion: Short Exeter stems show acceptable results at long term follow-up. However, we observed three stem fractures (1.2%). This rate exceeds previously reported rates in standard Exeter stems. More studies on this topic are needed.

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**O26 Short stems**

**O26-471**

MID-THIGH PAIN AFTER SHORT-STEM COMPARED TO CONVENTIONAL STEM UNCEMENTED TOTAL HIP ARTHROPLASTY AT MEDIUM TERM FOLLOW-UP - A RANDOMIZED DOUBLE BLINDED CROSS-SECTIONAL STUDY.

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Introduction/objectives: To compare prevalent, incidental and persistent mid-thigh pain between short-stem, Collum Femoris and Collum Femoris Preserving (CFP) and conventional stem, Zweymuller Alloclassic femur prosthesi. To study associations between demographics, radiographic measurements and mid-thigh pain.

Methods: We contacted patients cross-sectionally within a randomized controlled trial after uncemented Total Hip Arthroplasty (THA) for hip osteoarthrosis at a mean follow-up of 44 months (range 24-64 months). Patients were specifically assessed for prevalence (during survey) and incidence (any time post-operative for >1 week) of mid-thigh pain specifically assessed for prevalence (during survey) and incidence (any time post-operative for >1 week) of mid-thigh pain.

Results: 140 of 150 patients (93%) responded to our survey. Mean age at operation was 62 years (17-90). Mid-thigh pain was prevalent in 16 patients (23%) in the CFP-group compared to 10 patients (14%) in the Zweymuller-group (p = 0.192). Incidental mid-thigh pain occurred in 24 patients (34%) in CFP-group compared to 15 patients (21%) in the Zweymuller-group (p = 0.090). Persistent mid-thigh pain was found in 13 patients (19%) in the CFP-group compared to 5 patients (7%) in the Zweymuller-group (p = 0.043). Varus malalignment (CI 1.819 (95% CI 1.034 - 3.200) and leg length discrepancy (CI 1.107 per cm lengthening (95% CI 1.026 - 1.196) showed significant associations with mid-thigh pain.

Conclusion: We found more persistent mid-thigh pain after short-stem uncemented THA compared to conventional stem uncemented THA during medium-term follow-up. Varus malalignment and leg lengthening were associated with mid-thigh pain.

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**O26-518**

A 5-YEAR RADIOLICAL STUDY OF A SHORT STEM WITH PRESERVATION OF THE FEMORAL NECK. IS METAPHYSEAL FIXATION TRUE?

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Introduction/objectives: Some short stems with preservation of the femoral neck studies describe a loss of metaphyseal bone mass and increased distal bone density. This suggests diaphyseal fixation instead of metaphyseal fixation. The hypothesis of our study is that the distal fixation of these short stems is directly related to the size of the implant, especially in cases of over sizing.

Methods: We retrospectively reviewed the short stems implanted in our service between 2001 and 2012 with a radiological minimum follow-up of 5 years. 198 stems were implanted, 36 of them did not comply with the minimum follow-up. They were classified as infrasized, normosized and oversized in relation to the distance between the distal rim of the stem and the cortical bone in the distal third of the stem. We studied the metaphyseal bone loss (stress shielding), the distal cortical hypertrophy and the hip scrosis. Statistical analysis with Chi Squire.

Results: 160 stems were studied. 36 were infrasized, 81 were normosized and 43 were oversized. We found stress-shielding in 42 cases, distal cortical hypertrophy in 38 and tip sclerosis in 14 (74.4% of the oversized and 8.5% of the normosized and infrasized presented stress-shielding. (Statistically significant difference with p < 0.005). Distal cortical hypertrophy was present in 49% of oversized and in 6% of normos and infrasized (Statistically significant difference with p < 0.005). No statistically significant difference was found for type sclerosis between oversized (16.3%) and normal or infrasized (8%). P = 0.088.

Conclusion: The over sizing of our short stem with preservation of the femoral neck may involve a loss of metaphyseal bone mass and a distal cortical hypertrophy that indicates distal fixation instead of metaphyseal fixation.
O26 Short stems

O26-396
THE MIGRATION PATTERN AND INITIAL STABILITY OF THE OPTIMYS SHORT STEM IN TOTAL HIP ARTHROPLASTY: A PROSPECTIVE 2-YEAR FOLLOW-UP STUDY OF 33 PATIENTS WITH RSA. de Waard, D. (1); Stavelek, L. (1); Jorit, R. (1); Hoornenborg, D. (1); van der Voo, R. (1); Kuijk, G. M. (1); Harreveld, U. (1).

Introduction/objectives: The consensus that bone stock preservation and optimal restoration of offset and leg length is important in total hip arthroplasty is now widespread, especially for young and active patients. Short stems seem promising in this aspect, though implant stability is still of concern. This study looked at the migration pattern of the Optimys short stem through RSA analysis.

Methods: Forty patients were included. RSA images were made directly postoperatively (within 5 days) at 6 weeks and at 3, 6, 12 and 24 months. Double examinations were made for precision measurement. HOOS scores were obtained preoperatively and at two years. Four patients were excluded due to protocol violation, two patients were lost to follow-up (n=1 lost, n=1 deep infection with revision), one patient was excluded for RSA analysis due to a CN number >110.

Results: Mean age was 60 years with a mean BMI of 27. RSA analysis of 35 patients showed a significant initial median proximodistal translation (subidence) of 0.21mm (IQR 0.94-0.06) and antversion-reversion rotation of 0.59 (IQR 0.01-1.34) in 8 weeks, after which the stem stabilizes and showed no further significant movement. Mean migration in other directions was small. Four patients had an initial subsidence of >2mm, all showed secondary stabilization. HOOS outcome scores were satisfactory, with the domain symptoms and pain showing a median score of 95/100 at two years follow-up.

Conclusion: After initial migration the Optimys achieves secondary stabilization, predicting a satisfactory long-term survival of the stem.

O26 Short stems

O26-397
IS THERE A ROLE FOR SHORT STEMS IN THE TREATMENT OF HIGH DISLOCATED PATIENTS WITH TOTAL HIP ARTHROPLASTY? A COMPARATIVE PROSPECTIVE COHORT COMPARING SHORT VS. STANDARD STems. Reiseto, N. (1);(2); Gudmundsen, O. (1);(2); Elgen, K. (1);(2); Brandtzæg, P. (1);(2); Johnsen, P. (1);(2).

Introduction/objectives: Since 2012 we are using Short stems in selected cases; one of our preferred indications because of small metaphyseal diameters would become Hip Arthroplasty in High dislocated hips; we have decided to compare our outcomes, with one only short stem model with a well-recognized Standard Stem, performing Total Hip Arthroplasty in 76 Crowe III & IV hips, in two different cohorts.

Methods: Since 2012, we have created a prospective protocol to treat all our Crowe 3 & 4 hips with a Total Hip Arthroplasty, descending it to the original acetabulum, with two different stems according each institution. In the first one we didn’t change our protocol and use the combination Pinnacle/Corail® and at the second one we begin to perform our femoral side with a MiniHip® Short Stem from Conin (UK) pairing two cohorts of 36 hips each, evaluating results, hip scores, complications included fractures and/or scar tissue neuprapyxia.

Results: We perform a THA with a Suprapylodial femoral Osteotomy in 76 Crowe 3 & 4 dislocated hips, performed for one only surgery with the same team, divided in two cohorts according the utilization of a Conin® standard stem (n=6) or MiniHip® short stem. Our results were impressive, coming from 46 to 79 mms of leg discrepancy, with only one Scatic neuprapyxia in each group, with no fractures or subluxation, increasing our hip scores and with similar satisfaction in both groups.

Conclusion: THA in High Chronically dislocated hips are a technical challenge for surgeons; with the advent of short stems, with small diameters and an optimal geometry to avoid removal of old hardware, we have decided to prove it in equal condition to our standard protocol, finding that we can solve difficult hips as well as usually with a short stem.

O26 Short stems

O26-497
A NEW TRICONICAL GREATER TROCHANTER SPARING SHORT STEM. RESULTS AT FOUR YEARS. Ribas Fernández, M.* (1); Cardenas, D. (1); Bellati, V. (1); Astoria, E. (1); Moya, E. (1); Ramírez, L. (1).

Introduction/objectives: In the last decade, different short stems have appeared, but not all are equal in design, femoral cut level, biomechanical properties or hip bone response. A new non cemented titanium alloy porous coated triconical short stem with calcar resection was introduced. The aim of this study is to analyse clinical-functional results as well as data related to stem bone.

Material and method: 128 hips in 119 patients were included in this study with a mean follow-up of 45.4 months (range: 37.41 months). All patients were implanted with a new short stem of titanium alloy without cement, with modular neck or monoblock and mini-posterior or supracapsular portal assisted approaches were used. Patients were followed at 6, 12 months and annually. WOCAM, Marks D’Aubigne, Harris Hip Scores and the UCLA activity scale were recorded in the preservative and postoperative clinical records. Selection criteria for the implantation of this stem were a value of femoral T-score above -1, Don Farnet type A and B, age less than 75 years and BMI<30. Results: The mean WOCAM score improved from 46.2 points (29 - 51) to 96.9 (66 - 100, p<0.001) Marks D’Aubigne from 17.8 (11.8 - 74) - 17.1 (15 - 18, p<0.01), MHS of 37.4 points (range 26 - 66) to 93.8 (61 - 100, p<0.001). The UCLA Scale was 7.1 (0 - 11.1, 95% CI). Radiolucenta <1 mm were observed in zone 4 in 15 cases without further changes later. Neutrofilic trabecular pattern was observed in zones 2.3, 5 and 6 without peripheral widening. One stem had to be explanted due to deep infection. Conclusion: the evaluation over 4 years of this new implant offers promising results in terms of clinical, functional, radiological, although more long-term results are needed.
Short stem hip prosthesis are well known but scarcely used in obese patients. The prevalence of obesity is increasing and more young people will need prosthetic surgery, so bone saving will be helpful in case of future revision.

Introduction/objectives: The purpose of this prospective case-control study is to evaluate THA in patients with BMI greater than 30, comparing the use of short vs traditional stems. The aim is to evaluate if short stems are reliable in obese patients or not.

Materials and Methods: 48 THA patients (age 43-85 years, M:F=24:24) with BMI greater than 30 (30,1-44,5) were selected, including 35 short stems and 17 long stems, affected by primary, post-traumatic osteoarthritis and avascular necrosis. The clinical outcomes were evaluated by HHS, WOMAC, VAS and SF-12 F-M scales. Osteointegration, subsidence, offset, CD angle, limb length discrepancy, acetabular inclination, heterotopic ossification were analyzed by 3 blinded readers on X-ray by AXIOVISION software (Carl Zeiss Microimaging GmbH) and stem stability was quantified by Engh criteria. Statistical analysis was performed using SPSS (Chi-square, T-Test).

Results: The mean follow-up was 36 months. All the stems were well positioned and osteointegrated. There were no implants failure. Short stems had higher scores in SF-12F and SF-12M (P<0.005), and better cup inclination (P<0.01) while the two groups were comparable for WOMAC, VAS and HHS.

Conclusion: Short stem hip prosthesis showed good clinical and radiographic results and are reliable even in obese patients. Long-term studies will be helpful to access the risk of weight on the survival of these implants over the time.

O27-181 TANTALUM AUGMENTS FOR PAPINNSKY TYPE IIA AND IIB ACETABULAR REVISION: EXCELLENT MID-TERM RESULTS IN 15 PATIENTS; A PROSPECTIVE COHORT STUDY

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Introduction/objectives: Our study aims to determine whether the use of tantalum implants (cups and augments) could provide stable reconstruction for type IIA and IIB of acetabular revision.

Methods: Data were extracted for the Arthroplasty Registry Thessaloniki. 15 patients with non-incised failed acetabular components after THA that were reconstructed using porous tantalum acetabular components and augments, between 2012 and 2017, were included. There were twelve Papinnsky type IIA and two type IIB acetabular defects. Radiographic signs of osteointegration were classified according to Moore. The HHS, SF-12 and WOMAC Scores were evaluated. A metal backed or a fully Tantalum socket was used in 8 patients and in 7 patients a cemented liner was implanted.

Results: The mean age of the patients was 71.5 years and the mean follow up was 3.5 years. The hip centre of rotation was restored in 14 patients. The improvement of mean HHS, WOMAC Index, and SF-12 scores were statistically significant (p<0.001) at the last follow-up. 10% of patients developed radiological persistent loosening up to the last follow-up. The radioluencies were about the ream of the augment due to incogruency but no instability or pain were recorded. At the last follow-up, all cups were radiographically stable and none required re-revision for loosening. The acetabular revision was considered successful in 87% of cases. No other complications were recorded.

Conclusion: Good clinical and radiological results can be expected for bone-deficient acetabula with Papinnsky type IIA / B defects treated by a TM cup and augment, but for pelvic discontinuities this might not be a reliable option. Given their mechanical properties, tantalum implants are reliable in creating a durable composite for midterm follow up.
Introduction/objectives: An aging population has led to increased demand for acetabular bone-deficient revision hip surgery. Traditional methods to reconstruct acetabular defects are arduous for both patient and surgeon. Metals with elasticity similar to bone can achieve good osseous integration. We study the use of porous titanium press-fit acetabular shells for a range of revision defects.

Methods: We captured data retrospectively on a cohort of 70 consecutive patients who underwent Revision THR performed by the senior author. All patients received a Titanium press-fit acetabular shell. Patient charts, operative notes and radiology were reviewed. Indications for surgery included: aseptic loosening, joint infection, instability or periprosthetic fracture.

Results: This single-surgeon study includes 70 consecutive porous titanium press-fit acetabular shells. Cemented arthroplasty was the most common primary replacement (71%) with mean 13 [8-37] years since index surgery. 34 patients (48%) had Paprosky Type 2 or greater acetabular deficiency. Only 5 (7%) cases resulted in inclination change over 5 degrees. 10 cases (14%) had horizontal movement of >4 mm. Prior THR had not revealed significant horizontal migration (p > 0.06). Acetabular inclination and horizontal movement revealed variability without significance.

Conclusion: We present good early results with porous titanium press-fit shells for acetabular revision. No dislocations have been reported in this cohort despite a femoral revision rate of 88%. We are compiling follow-up at 5-years since revision with radiological assessment. Porous titanium shells provide good early results and stability in all acetabular deficiencies without bone graft or metal augment, allowing rapid recovery following revision arthroplasty.

Introduction/objectives: Hip revision is a demanding procedure even for skilled surgeons due to severe periprosthetic bone loss, which can be managed with bone graft or with bone substitute, but cannot neglect the use of implants providing firm grip and optimal bone ingrowth. Aim of this study is to evaluate short to mid-term outcomes of Trabecular Titanium revision cups.

Methods: We retrospectively assessed 25 revision cases using Delta TT Revision (N° 13) or Delta-One TT (N° 11) cups. Revision procedures were due to aseptic loosening in 18 cases (72%), metal-on-metal pseudotumor in 3 cases (12%) and periprosthetic fractures in 4 cases (16%). Mean age of the patients was 74 years (range 59-84)/ 55% was men. According to Paprosky classification, we treated 1 type 1, 5 type 2a, 6 type 2b, 5 type 2c, 3 type 3a and 5 type 3b. We evaluated patients clinically, with Harris Hip Score (HHS), and radiographically.

Results: Mean follow-up was 44 months (range 13-67). We managed bone loss with bone allograft in 13 cases and with bone substitute in 12 cases. In 7 cases, we used modular TH hip modular cups to fill the acetabular gap. Aside of the periprosthetic fractures group, mean HHS increased from 37.2 (18-58) preoperatively to 87.1 (64-100). By X-ray analysis, we observed signs of osseointegration, without osteolysis, radiolucent lines, or migration.

Conclusion: Trabecular Titanium is an excellent solution for revision surgery; the rough surface provided an optimal mechanical grip and showed a high capacity for osseointegration. The possibility of using modular spacers to restore the hip geometry makes these cups a versatile solution in cases of severe acetabular bone loss.
**O28 Infection**

**O28-135**

REDUCTION IN PROSTHETIC JOINT INFECTION AFTER INTRODUCTION OF PER-OPERATIVE WOUND IRRIGATION WITH CHLORHEXIDINE: A LARGE SCALE EVALUATION OF A CHANGE IN STANDARD CARE

Rutgers, M.**; Yeh, K. F.; Mostak, D. J.; Postman, R. W.; Wilgenburg, N.; Kempen, D.

Introduction/objectives: The consequences of a prosthetic joint infection (PJI) can be devastating. Preoperative application of chlorhexidine could provide a valuable additive to systemic antibiotics to reduce the infection rate after total joint arthroplasty. However, it may cause cytotoxicity, and impair wound healing. The purpose of this study was to compare the rates of infection and wound leakage before and after introduction of peroperative chlorhexidine lavage.

Methods: All 4494 patients receiving a primary hip or knee prosthesis between 2007-2013 were retrospectively included. Initially, wound irrigation with 0.9% NaCl was standard care (n=2304). In 2008, irrigation with chlorhexidine was gradually introduced (n=2190). The incidence of PJ and wound leakage were correlated to baseline characteristics and details from the medical and surgical reports. The effect of chlorhexidine on infection and wound leakage was determined using multivariate logistic regression models and corrected for relevant baseline characteristics.

Results: The prosthetic infection rate was 2.5% in the NaCl group and 1.5% in the chlorhexidine group, while wound leakage occurred in 15.9% of the NaCl group and 19.0% of the chlorhexiding group. Multivariate logistic regression revealed that chlorhexidine significantly reduced the risk of infection (OR=0.55, 95%CI [0.35-0.88], p=0.009) and did not significantly affect wound leakage (p=0.254).

Conclusion: Implementation of chlorhexidine lavage before wound closure as standard clinical practice reduced the incidence of SSIs which would help ascertain if laminar flow reduces the incidence of SSI.

**O28 Infection**

**O28-536**

DOES LAMINAR FLOW REDUCE THE RISK OF EARLY SURGICAL SITE INFECTION IN HIP FRACTURE PATIENTS?

Din, A.**; O'Byrne, M.; Foden, P.; Mathew, M. D.; Periasamy, K.

Introduction/objectives: To determine if there is a difference in the rate of early infection in trauma operations performed in patients who sustained a hip fracture and underwent laminar flow in surgical site infection (SSI).

Methods: We assessed the rate of early surgical site infection (SSI) in patients who sustained a hip fracture after our trauma theatre was moved from a laminar flow to a non-laminar flow theatre following the merge of the trauma service in NHS Lanarkshire. We retrospectively collected data for six months prior to the merging of the trauma service and six months after. For each operation: age, gender, ASA grade, co-morbidities, drug history, smoking status, duration of surgery, administration of peri-operative antibiotics, surgeon grade, method of skin closure, and SSI were documented in the hospital electronic notes and with input from the trust's SSI surveillance team.

Results: 252 patients included, 95 patients in the laminar flow group and 157 in the non-laminar flow group. There were no SSI's in the former group but there was a 3.2% SSI rate (Fisher's exact p=0.16) in the latter group. This was not statistically significant. Each of the patient characteristics was included in a fifth logistic regression model. There was no large change in the odds ratio for laminar flow after adjusting for each of the characteristics. Therefore, these were not responsible for the non-significantly higher rates of SSI's in the non-laminar flow group.

Conclusion: There was a higher incidence of early SSI when hip fracture surgery was performed under non-laminar flow but this was not statistically significant. Future studies with larger number of patients is required to obtain a higher number of SSI's which would help ascertain if laminar flow reduces the incidence of SSI.

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**O28 Infection**

**O28-127**

RISK FACTORS FOR PERIPROSTHETIC JOINT INFECTION AFTER PRIMARY TOTAL HIP ARTHROPLASTY: AN ANALYSIS OF INSTITUTIONAL DATA

Triantacloulos, G.**; Saranoglos, V.; Mentoukidou, S.; Souzo, T.; Poulakis, L.

Introduction/objectives: Our purpose was to determine the rate of deep periprosthetic joint infection (PJI) and risk factors for developing PJI in patients treated with primary total hip arthroplasty (THA) in a tertiary institution.

Methods: We retrospectively reviewed clinical characteristics of patients treated with primary THA between 1/2009 and 12/2013, including demographics, comorbidities, length of stay, primary diagnosis, total/allogeic blood transfusion rate and in-hospital complications. Minimum follow-up was 29 months. The overall deep PJ rate, and the rates for early- (within 2 years after index surgery) and late-onset PJI (more than 2 years after surgery) were calculated. A Cox proportional hazards regression model was constructed to identify risk factors for developing deep PJ. Significance level was set at 0.05.

Results: Overall, 36,494 primary THAs were included (20,497 men and 15,997 women; mean age, 64.4 years). A deep PJ occurred in 154 patients (0.4%). An early-onset PJ occurred in 122 patients (0.3%); 32 patients (0.1%) developed a late-onset PJI. At any given time, patients with coronary artery disease were 1.65 times more likely to develop deep PJ (HR=1.65, 95%CI [1.07, 2.55], p=0.029) than patients without coronary artery disease. Obese patients were 2.84 times more likely to develop deep PJ at any given time than non-obese patients (HR=2.84, 95%CI [1.51, 5.36], p=0.001). Patients with pulmonary hypertension were 2.05% more likely to develop deep PJ at any given time than patients without pulmonary hypertension (HR=3.05, 95%CI [1.23, 7.56], p=0.016).

Conclusion: Despite low rates of deep PJ after THA, identifying patients with modifiable risk factors remains of critical importance.

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**O28 Infection**

**O28-515**

COMPARISON OF DIFFERENT ANTIBIOTIC PROPHYLAXIS REGIMINES IN THE RISK OF REVISION FOR INFECTION FOLLOWING PRIMARY JOINT ARTHROPLASTY OF THE HIP AND KNEE IN THE NETHERLANDS.

Veltman, E.**; Lengemund, E.; Mojon, D. J.; Whitehouse, M.; Nelszen, R. G.H.M.; Bloem, A.

Introduction/objectives: Administration of perioperative antibiotic prophylaxis (AP) reduces the risk of prosthetic joint infection (PJI) following primary total hip arthroplasty (THA). The optimal type of antibiotic used and duration of prophylaxis are subject to debate.

Methods: We compared the risk of revision surgery for PJI in the first year following THA by AP regimen. A national survey collecting information on hospital-level AP regimen policy was conducted across the Netherlands and linked to data from the LROI arthroplasty registry for 2011-2015. Full status was defined using the surgical indication reported at revision surgery in the registry. Restricted cubic splines Pearson model adjusted for hospital clustering were used to conduct the comparisons on 136,712 THA procedures across 99 institutions. These included 399 THA were reviewed for an indication of PJI.

Results: Multiple shot of Cefazolin (MCZ), of cefuroxime (MCX) and single shot of Cefazolin (SCZ) were respectively administered to 97%, 4% and 9% of patients. For THA, the rates of revision for PJI were respectively 31.5/10,000 person-years 95%CI[38.3, 39.7]; 32.9 and 24.8 (1.34) in the groups which received MCZ, MCX and SCZ.

Conclusion: There is no evidence of difference between AP regimens was found in the unadjusted and adjusted model (age, gender, BMI and ASA grade). Further work is advocated to confirm whether there is an association between AP regimen collected at patient-level and the risk of subsequent revision for PJI after primary THA.
Conclusion:
5 cases this was confirmed by the intraoperative Synovasure test. No tests were falsely positive.

Methods:
We aimed to assess the sensitivity and specificity of the Synovasure test to exclude infection in patients undergoing revision surgery for suspected early aseptic loosening.

Results:
Preoperatively confirmed PJI, acute revisions (< 90 days after primary arthroplasty) and cases with malpositioning, wear, or instability of the prosthesis.

Results:
5 of the 37 patients were diagnosed with a PJI based on the intraoperative tissue cultures. In only 1 out of these 5 cases the Synovasure lateral flow test was falsely negative. The rate of the Synovasure lateral flow test in the intraoperative exclusion of PJI during revision surgery for suspected early aseptic loosening appears to be more limited than previously indicated.

Introduction/objectives: The Synovasure lateral flow test was developed as a rapid test for the detection or exclusion of periprosthetic joint infection (PJI). Studies have reported promising results on its diagnostic value in total joint revision surgery, 3 studies have reported promising results on its diagnostic value in total joint revision surgery. We aimed to assess the sensitivity and specificity of the Synovasure test to exclude infection in patients undergoing revision surgery for suspected early aseptic loosening of a total hip or knee arthroplasty.

Methods: In a prospective study design, 37 patients who underwent revision surgery for suspected early aseptic loosening (< 3 years after primary arthroplasty) were included. The Synovasure test was used intraoperatively to confirm the aseptic nature of the loosening and to determine whether tissue cultures were needed in all cases. Exclusion criteria were patients with a preoperatively confirmed PJI, acute revisions (< 30 days after primary arthroplasty) and cases with malpositioning, wear, or instability of the prosthesis.

Discussion:
Low sensitivity of the Synovasure test to exclude PJI in patients with suspected aseptic loosening. The role of the Synovasure lateral flow test in the intraoperative exclusion of PJI during revision surgery for suspected early aseptic loosening appears to be more limited than previously indicated.

Conclusion:
Intra-operative frozen section histopathology is reliable for the diagnosis of periprosthetic joint infection if no dislocation or periprosthetic fracture has occurred prior to hip revision surgery. Recent trauma makes frozen section unreliable in revision hip surgery.