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**Guest Editor**  
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## eP1-305

**AMISTEM-H RADIOLOGICAL ASSESSMENT: 5 YEARS OUTCOME***Vié P*

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**Introduction/objectives:** Cementless total hip replacement (THR) preserves bone vitality around the prosthesis. It reduces the prevalence of periprosthetic osteolysis and long-term loosening of components. The short curved AMISTem design facilitates implantation in anterior approach and allows bone stock preservation. The aim of the current clinical study is to evaluate the clinical and radiological performance of AMISTem-H five years after implantation.

**Methods:** It is a retrospective, single-centre, single-surgeon study on a series of 81 patients (83 hips) who received cementless stem AMISTem-H (Medacta International SA, Castel San Pietro) at 5 years follow-up. All surgeries were performed by the AMIS technique (Anterior Minimally Invasive Surgery) with the mobile leg positioner AMIS (Medacta). Pain and activity levels were collected. At 5 years follow-up, 2 patients died and 2 were lost to follow-up. Osteointegration of the stem and greater trochanter fractures were noted. The periprosthetic radiolucent lines were evaluated according to Gruen zones.

**Results:** At 5 years, 97% of patients had no or mild hip pain and 3% slight pain. 2 traumatic femoral fractures that didn't require a stem replacement and one femoral neck ossification occurred. No stem fracture, no significant subsidence, no endosteal cavitations or resorption of the medial neck and no critical radiolucencies were observed. No revisions were performed and the survival rate at 5 years was 100%.

**Conclusions:** These results suggest that the AMISTem can be used safely and effectively for the surgical treatment of degenerative and inflammatory diseases of the hip in THR for a wide range of patients.

## eP1-146

**STRESS-SHIELDING AFTER TOTAL HIP ARTHROPLASTY WITH DIFFERENT KINDS OF STEM DESIGN***Pidaqaiska O, Filipenko V*

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**Introduction/objectives:** The clinical results of total hip arthroplasty (THA) with a cementless prosthesis have been constantly improving due to progress in the area of stem design. Cementless designs differ from one another in terms of geometry and the means of obtaining initial fixation. The purpose of this study was to investigate the appearance of stress-shielding at different stem designs and how the shape of femoral canal can influence the stability of implant.

**Methods:** The results of 128 total hip arthroplasties performed in 119 patients with insertion of different types of femoral components (short stems, Muller stems of metaphyseal fixation and distal type of fixation) without cement were reviewed retrospectively to determine the stability, signs of stress-shielding and aseptic loosening. The average duration of clinical and radiographic follow-up was 7.6 years (range 5.0 to 8.5 years). Estimation of stem fitting was made according to the shape of femoral canal by P.C. Noble classification.

**Results:** Radiographs demonstrated stable fixation in 98 cases (82%). Signs of stress-shielding were observed in 19 patients (16%), aseptic loosening - 5 cases (4%), stress-shielding preceded to stem loosening in 3 cases (2.4%). At the time of the latest follow-up, 16 patients reported that they had mild pain related to the hip. Three patients had revision operation on the cause of stem loosening. Due to statistical analysis the risk of pathological bone remodelling after THA was calculated. It was revealed that the result of arthroplasty at "stovepipe" shape of femoral canal statistically ( $p = 0.002$ ) depended on the type of femoral component.

**Conclusions:** Stem design and the shape of femoral canal should be taken into consideration at preoperative planning.

## eP1-204

**CFP STEM, THE SECOND GENERATION OF THE FEMORAL NECK PRESERVING: RESULTS IN 15 YEARS FOLLOW-UP***Palermo A<sup>1</sup>, Cannizzaro S<sup>1</sup>, Marconi G<sup>2</sup>*<sup>1</sup>Istituto Auxologico IRCSS Capitanio Milano, Milan, Italy; <sup>2</sup>Casa di Cura Villa Fiorita, Prato, Italy

**Introduction/objectives:** The concept of femoral neck preservation proved to be successful from the beginning. Also long term follow up showed that the femoral neck preservation can guarantee many advantages:

- bone stock preservation;
- respect for bone structure;
- respect for muscle tension throughout off-set preservation.

**Methods:** CFP stem, by Link Company (Collum Femoris Preserving), is an anatomical stem that respects cervical shaft angle and neck antiversión. Two different curves (A, B) and two neck orientation angles, respectively of 117 and 126 degrees, are available and the presence of a removable support collar, at the level of a neck osteotomy, offers different implant opportunities, making the C.F.P. similar to a modular stem, without the disadvantages of the real modularity. This stem design guarantees the respect of proximal trabecular bone and the continuity of their trajectory with the pelvis. The great primary mechanical and metaphyseal stability is due to the intersection of two cylinders, with the result of an important press-fit and a great torsional stability. Medium and long-term results demonstrate that the use of the collar is sometimes useless, since proximal stress loads is evenly distributed, as showed in DEXA analysis. Off-set improvement, guaranteed by the stem curvature and femoral neck conservation, is showed by a rapid patient's joint functional recovery, with a reduction in Trendelenburg, during walking. The possibility to choose between two different curves makes it possible to customize the implant, according to different articular morphologies, but in order to do that, it is necessary to create a precise preoperative planning. Number of patients with A curve stems was higher than number of implants with B curve. This kind of choice has been influenced not only by replaced hip morphology, but also by neck osteotomy height, performed by surgeons. Shortest femoral neck osteotomy, usually leads to the choice of an implant with A curve. One of the problems faced in that kind of implant, especially for first time and less experienced users, was the risk of stretching the leg. This mistake has been made by those surgeons who, in order to preserve all femoral neck, believed it was necessary to practice neck osteotomy too, under the head. However, to implant C.F.P. stem correctly and in order to preserve the femoral neck, it is sufficient to practice an osteotomy at one and a half centimetre from piriformis dimple. To choose the right curve and osteotomy height, it is essential to use a precise radiographical pre-operative planning and in order to achieve that, you need an x-ray with 20 degrees intrarotation of the leg you have to operate. This guarantees an improvement in the choice of curve and consequently, a higher risk control for leg dysmetria. The cases found in aseptic loosening were rare and due to surgical technique mistakes about undersized stem. C.F.P. however, is not a cortical fit stem, but an implant that compresses and respects cancellous bone.

**Results:** In this presentation we are showing a 15 year follow up, with clinical analysis in patients made by Harris hip score and x-ray analysis, with radiographical parameters following Tom Gruen division. All the host bone segment has been valued with DEXA analysis on 40 patients, making tests of reproducibility on DEXA EXPERT equipment.

**Conclusions:** We will report our clinical and X-Ray results with that kind of implant, from its birth until today.

## eP1-303

**THE ANATOMICAL CONCEPT IN HIP STEM: LEARNING FROM THE PAST***Franceschini M, Calabro' F, De Bartolomeo O, Mineo G*

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**Introduction/objectives:** The design of the femoral component in THA has a key role because it influences the implant stability and the long-term survival of the prosthesis. With our long lasting experience on anatomical stem, one year ago we started implanting a new hip stem, the Link SPCL. With this study we want to point out anatomical stem features and qualities.

**Methods:** We analysed retrospectively 62 consecutive cases of coxarthrosis treated with SPCL anatomical stem in 2015. We compared our series with similar studies founded in literature. Our study was focused on the femoral component properties and on both clinical and biomechanical benefits. We used Harris and Oxford Hip Scores and x-ray assessment at 3, 6 months and 1 year postop. We furthermore studied with a finite element model the stress-distribution on the femur comparing a straight with an anatomical stem.

**Results:** The correct antiversión angle, the optimization of the size and the better implant geometry gave good radiological results in our records. Harris and Oxford Hip Scores demonstrated excellent clinical improvement at 3 and 6 months, in particular if the implant was associated with the direct anterior approach (DAA). Complications were: 1 heterotopic ossification and 1 intraop periprosthetic fracture. The biomechanical study confirmed a better distribution of the forces for the anatomical stem.

**Conclusions:** In our opinion the anatomical stem may be preferred to straight stems for biomechanical factors. It guarantees optimal stability



of the implant, furthermore the anatomical design allow less mechanical stress on the femur reducing thigh pain and periprosthetic fracture risk.

#### eP1-100

##### METALLOSIS AND PSEUDOTUMOR AROUND CERAMIC-ON-POLYETHYLENE TOTAL HIP ARTHROPLASTY: CASE REPORT

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**Case study:** Polyethylene failure is a rare complication of ceramic-on-polyethylene total hip arthroplasty due to characteristics of ceramic. Complications associated with ceramic-on-polyethylene articulations have been studied extensively, however, only few reports have described its catastrophic wear and concurrent pseudotumour formation. The etiology of this biological reaction and concurrency of pseudotumour formation with metallosis remain unclear. We report two cases of wear of the acetabular liner in a ceramic-on-polyethylene prosthesis due to total hip arthroplasty (THA) long time ago. They came back to the clinic with the history of worsening hip pain and abnormal radiological and clinical findings. Then they underwent surgery and metallosis and pseudotumours were detected and revisions were performed for them. It is necessary to evaluate patients who underwent THA complaining of hip pain for component wear and check that the cup appears well fixing and fairly oriented on follow-up radiographies. Close follow-ups can prevent accelerated polyethylene wear in ceramic-on-polyethylene coupling THA.

#### eP1-230

##### DIRECT ANTERIOR APPROACH AND ANATOMICAL FEMORAL STEM FOR PRIMARY THA. MID-TERM OUTCOME IN 500 CASES

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**Introduction/objectives:** The goal of this report is to evaluate the results of a direct anterior approach with cementless anatomical short stem in young, active patients.

**Methods:** Results of 500 consecutive THA performed between 2008-2011 are reviewed in a Fup of at least five years. The mean age at the time of the operation was 53 years. The reason for op are: pr OA-441 cs; AVN-56 cs; Fx femoral neck-3cs. simultaneous op- 86 cs. Used cementless anatomic stem- ABGII in all cs. Period of Fup- 60 months (449cs). Lost for Fup-50 cs; death- 1 cs (pulmonary Ca) Items for F up are: achievement of rehabilitation milestones; cane usage; complications.

**Results:** Harris Hip score was altered to 90 points (92.2-6.48) in comparison with the initial values -30.01 ± 13.25. At the control radiographic examination the stem position was good in the neutral position or slight valgus (<5° of varus) except in 5 cases in a varus position, with most frequent reason being the implanting of a smaller than the necessary size of femoral stem. At the last Fup there are not cases with heterotopic ossification. Complications included fx of the lateral femoral cortex (intra- op)-2cs, malposition of the stem-2 cs, varus position of the stem in 5 cases, postoperative dislocation - two patents with a long-standing posttraumatic OA. Late infection (>2 y) -2 cs. 24% of the patients reported for a certain extent of hipoaesthesia.

**Conclusions:** The anatomical ABG II HA stem for cementless fixation has shown encouraging results with primary and mid-term stability. Restoration of leg-length equality is not difficult with a direct anterior single-incision mini-approach. The less surgical dissection and reduced blood loss make possible to replace both hips simultaneously as a single procedure with one anaesthesia.

#### eP1-306

##### POSTEROLATERAL VERSUS LATERAL APPROACH IN TOTAL HIP ARTHROPLASTY, A PROSPECTIVE STUDY

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**Introduction/objectives:** Decision making about the approach of the total hip arthroplasty (THA) is often based on the surgeon's preference and local

traditions. An ongoing debate is available in the literature about the best approach of THA. The purpose of the study was to compare the early results of lateral versus posterolateral approaches in THA.

**Methods:** It is a prospective non randomized cohort study. 137 hips in 120 patients divided in two groups for primary THR. 79 cases in the lateral (L) and 55 in posterolateral (PL) group. All the patients received enoxaparin for prophylaxis of VTE. Clinical and radiographic evaluation documented at 6, 12, 24, 48 weeks after surgery. Post op evaluation includes pain visual analog score (VAS), Harris hip score (HHS), blood loss, and major clinical complications and radiological evaluation. Mean follow up was 17 months (12-30).

**Results:** There was no significant difference between two groups regarding demographic data as well as preoperative diagnosis. Clinical results showed that HHS doubled 12 weeks after surgery in both groups. Regarding pain there was less pain in PL group at 6 weeks after surgery but it was not significant and it were the same after that. Blood loss (430 cc in L versus 460 cc in PL) was the same. There were four proximal femur fractures in L and two in PL group (p = 0.22) managed by wiring. There were 2 infections and 4 DVT with no significant difference. Dislocation happened in two cases equal between two groups. Radiographic evaluations revealed no difference.

**Conclusions:** Our study showed that PL and L approaches have similar clinical and radiological results in THR after one year, which is consistent with other studies. There was less pain in posterolateral group at six weeks but after 12 weeks patients feel the same level of pain.

#### eP1-299

##### THE EVALUATION OF RESULTS OF PERIPROSTHETIC FRACTURE TREATMENT IN PATIENTS WITH HIP OSTEOARTHRITIS CAUSED BY RESIDUAL DYSPLASIA OF THE HIP JOINT WITH DISLOCATION OF TYPE III AND IV ACCORDING TO THE CROWE'S CLASSIFICATION

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**Introduction/objectives:** One of accepted methods of operative treatment of young adults with osteoarthritis (OA) coming as the sequelae of developmental dysplasia of the hip with dislocation (DDH) is total hip alloplasty (THA). The aim of this study was to determine the frequency of periprosthetic fractures occurring and to assess the results of treatment of this complication.

**Methods:** In years 2009-2015 we operated 91 hip-joints of 81 patients with OA as a sequelae of DDH with dislocation of type III and IV according to Crowe's classification. Mean age was 32 years old (from 15 to 64). For the purpose of the study two groups of patients operated from postero-lateral approach were established.

Group "A" consisted of 10 hips of 10 patients treated with the use of Accolade stems. Group "B" consisted of 81 hips of 71 patients, treated using Wagner's stems. In group "A" the follow-up period lasted from 3 to 7 years, and in group "B" from 1 to 7 years. Frequency of periprosthetic fractures were noted. The results were assessed clinically according to HHS and radiologically.

Periprosthetic fracture was observed in 4 out of 10 hips from group "A" and in 6 from 81 hips from group "B". The differences were statistically significant. All patients with periprosthetic fracture were treated using metal cables.

**Results:** In clinical and radiological assessment improvement was obtained in all patients. Decreased frequency of periprosthetic fractures in patients with OA as a sequelae of DDH was noted in all patients treated using cone stems.

**Conclusions:** Patients with OA as a sequelae of DDH with hip-joint dislocation of type III and IV according to Crowe's classification should be treated using cone stems.

#### eP1-143

##### TRABECULAR METAL CUPS IN COMPLEX PRIMARY TOTAL HIP ARTHROPLASTY. SURVIVAL AND CLINICAL OUTCOMES

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**Introduction/objectives:** A complex Primary total hip arthroplasty (CTHA) presents a challenge to achieving a stable acetabulum. The aim of this study was to assess survival and clinical outcomes in CTHA using uncemented trabecular metal acetabular implants (TMARS, Zimmer Inc., Warsaw, Ind).