

restoration of the anatomy through the perfect combination of the medial bending and the offset. The purpose of the study was the evaluation of intra-operative and early post-operative complications, the positioning of the prosthetic components, the preliminary clinical and X-ray results and above all the surgeon's learning curve.

**Material and methods** 120 Fitmore stems were implanted at our Units from January 2008 to August 2009. We used the Durum system in 20 cases, the Trilogy cup in 80 cases and a TMT modular cup in 20 patients. Sixty-six patients were men and 54 were women, the average age was 63 (range 29–75). In all cases we performed a mini posterolateral approach. The pre- and post-operative evaluation was done using the Harris Hip Scores (HHS). The post-operative X-ray analysis was performed to evaluate the correct positioning of the components compared with the pre-operative planning.

**Results** At an average follow-up of 15 months (range 6–27 months), the clinical X-ray results were good and satisfactory in all patients. We did not detect any case of luxation, infection or aseptic early mobilization. We were always able to restore the planned length and offset during surgery. In 95% of cases the size of the stem corresponded to the planned one.

**Conclusions** The Fitmore stem represents a correct and progressive evolution of the uncemented stems used so far, even having the same initial pressfit it allows saving trochanteric bone stock, an inferior percentage of heterotopic post-operative ossifications, very good versatility with the consequential restoration of the length and offset. In our short experience the Fitmore stem represents a reliable choice and a safe procedure even if longer follow-ups are required to evaluate the long-term percentage of failure.

### Highly crosslinked polyethylene in total hip replacement: clinical results over a 10-year follow-up

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**Objective** The highly crosslinked polyethylene has become the bearing material of choice for total hip replacement (THR) over the past decade. Crosslinking is a physical process that uses high energy radiation, permitting significant reduction in wear of acetabular liners, improving strength and fatigue resistance, while reducing important other mechanical properties of the polymer. Aim of the present study is to evaluate the long term results of the "DURASUL", UHMWPE liner, used at the Orthopaedic Clinic of University of Catania.

**Material and methods** Between March 1999 and February 2010, 485 Durasul liners were implanted for both primary and revisions prostheses. The group of study comprised 227 male and 258 female, with a mean age of 69 years (range 41–81 years). Correcta and CLS were the femoral components used, while Correcta, Fitmore and Trabecular Metal were the acetabular components. A 36 mm femoral head was utilized in 74 patients to improve stability and motion range of the prosthesis. The implants were followed both clinically, using the Merlè-D'Aubigne-Postel scale (0–18 points), and through the conventional radiology with serial controls at 3, 6, 12 months and then yearly.

**Results** The average follow-up was 7 years (range 1–11 years). Clinical results were good with a mean score that increases from 6 to 15 points in primary implants and from 3 to 11 in revisions. Radiographically there were no major signs of liner wear. Only 5 implants needed revision due to septic loosening. Inserts removed from the revised prostheses were sent to specialized laboratories to undergo MICRO-FTIR spectroscopic analysis. MICRO-FITIR spectroscopic analysis found no absorption around  $1,718\text{ cm}^{-1}$ , a typical expression of oxidative degradation products.

**Discussion** The long outcome of THR with long term follow-up depends on mechanical properties and physical characteristics of the implanted material. The highly crosslinked polyethylene, produced by a physical process that uses high energy radiation, is a safe and reliable material, that shows biocompatibility, reduction the amount of wear, the absence of oxidation, the possibility of using large diameter femoral heads.

**Conclusions** The highly crosslinked polyethylene has become the bearing material of choice for THR over the past decade and its use in total knee arthroplasty is increasing. Our series showed good results at long term follow-up, with a significant reduction in wear. However, clinical research should be directed to studying a new generation of polyethylene able to preserve the mechanical properties affected by crosslinking.

### Femoro-acetabular impingement. Classification, diagnosis and treatment

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**Introduction** The femoro-acetabular impingement (FAI) is the result of a number of congenital or acquired pathologies of the hip and it has as main pathogenetic element: an abnormal contact between the two joint components (acetabulum and proximal femoral epiphysis). Mainly male young adults, often athletes, are affected because of the repetition of gestures responsible for the conflict in these subjects.

**Classification** FAI has specific clinical and radiological characteristics and can be classified into three types: (1) CAM type (femoral); (2) Pincer type (acetabular); (3) CAM-Pincer mixed-type.

**Diagnosis** It is based on medical history (young and active patients, diseases or previous hip surgery), physical examination (reduced hip flexion and internal rotation) and on two classical tests:

- Provocative test for anterior impingement: flexion and internal rotation of the hip with the patient supine;
- Provocative test for posterior impingement: hip extension and external rotation with the patient prone.

The instrumental confirmation of the diagnosis relies on:

- Radiography (antero-posterior hip view, 45° axial view of the hip, "false profile" Lequesne view);
- Computed Tomography: useful for assessing the centering of the femoral head in respect to the acetabulum and eventual bone prominences, but does not show fibro-cartilaginous alterations;
- Magnetic Resonance Imaging an Arthro-MRI: more useful, compared to CT, for evaluating the intra-articular space, labral and cartilaginous lesions, and the presence of subchondral cysts.

**Treatment** If the conflict has already produced an overt arthritic degeneration, the only justified treatment is prosthetic replacement. If the disease is identified early it is possible indeed a conservative surgical treatment of articular heads in order to eliminate the causes of conflict and to re-delineate the anatomy of the joint.

In particular, the aim of this surgery is:

1. Recreating a proper off-set head of the femur neck with removal of bone formation in the neck;
2. Eliminating neck retroversion;
3. Repairing any associated injuries of the acetabular labrum and treating, where possible, other joint injuries.