

and 25 41C. The reconstruction of the articular surface, obtained pushing upward the tibial plate, was monitored with fluoroscopy and arthroscopy. The osteosynthesis was performed in the majority with plate and screws (57) while only in 6 cases it was used only free screws. In almost all the cases (59), the reconstruction was completed by bone substitutes (Norian, Callos) in areas of metaphyseal bone loss for the best support of the tibial plate. At an average follow-up of 138 months, these patients were clinically and radiographically checked to highlight the onset of knee osteoarthritis.

**Results** Radiographic evaluation of osteoarthritis, present in 57 cases, was estimated according to Alback, with 38 cases with radiographic I osteoarthritis, 15 of II and 6 of III. The clinical evaluation, according to Knee Society Score, checked 4 excellent cases, 21 good cases, 17 discrete cases and 21 poor cases.

**Discussion** The tibial plate fractures, despite a thorough joint reconstruction, at a later time, in one-third of cases, presents significant symptomatic and radiological joint degenerations. The joint degeneration occurred even after an adequate articular reconstruction in connection to the type of fracture, meniscal lesions and age of the patient.

**Conclusions** The tibial plate fractures require an accurate anatomical reconstruction and a good osteosynthesis. Despite this, the major articular alterations in older age lead to a crippling arthritic changes which often will require a joint replacement.

### Early experience of non-contact bridging (NCB) periprosthetic plate in complex periprosthetic fractures of total hip replacement (THR) and total knee replacement (TKR)

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**Introduction** The treatment of periprosthetic fractures is always problematic and, when fixation is the indicated treatment, choosing the right implant is as well very difficult. We present our preliminary experience of the treatment of complex periprosthetic fractures of the femur in order to evaluate the clinical outcome and early experience of NCB (2nd generation) polyaxial locking plates in periprosthetic fractures of THR and TKR without cortical strut graft.

**Materials and methods** Between January 2011 and July 2012, 11 cases of complex periprosthetic fractures of THR and TKR were prospectively reviewed. There were 2 males and 9 females with mean age of 80.7 years old (range 70–88) with an average follow-up of 10.2 months (range 7–16). The Vancouver and Rorabeck systems were used to classify fractures around THR and TKR respectively. All patients had clinical, radiographic assessment and underwent a patient satisfaction survey at 6 weeks, 3 months, 6 months and 1 year post-operatively.

**Results** There were 11 cases of periprosthetic fracture of THR: Vancouver C (n = 5), Vancouver B2 (n = 2), Vancouver B1 (n = 3) and 1 case of periprosthetic fracture of TKR: Rorabeck II (n = 1). There were three cases of interprosthetic fracture of the femur. All patients demonstrated clinical and radiological union of fractures at latest follow-up and all made a full return to pre-injury activities of daily living (ADLs). There were no cases of infection, mal or non-union. No other complications were noted. All patients were extremely satisfied with their clinical outcome.

**Discussion** The incidence of periprosthetic fractures is rising due to the increasing numbers of implants, the lengthening of the average life expectancy and the increased functional expectations of our patients. The typical patient is usually elderly, with several comorbidities and often under steroids. Technically, the treatment is often

extremely challenging due to the fracture configuration and bone quality. Choosing the right implant is often difficult. A good implant, in order to be employed in the most possible fracture configurations, should be easy to use and very versatile.

**Conclusions** The early experience and clinical outcome of this prospective study suggest that NCB (2nd generation polyaxial locking plate) periprosthetic plate is a viable option for complex periprosthetic fractures around THR and TKR without the use of cortical strut allograft. The short-term outcome is particularly promising in complex interprosthetic fractures of THR and TKR.

## C02-TRAUMATOLOGY 2

### The articular reconstruction in complex acetabulum fractures: functional and clinical results in our personal experience

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**Introduction** In our study we analyzed prospectively the results of patients with complex dislocated fractures of the acetabulum treated over a period of 4 years (from 1 January 2008 to 1 January 2012).

**Materials and methods** We included 55 patients, 44 were males and 9 were females, aged 28–83 years (mean 38 years). In 16 cases a central dislocation of the femoral head was associated. The fractures were classified using the classification of Judet–Letournel. During operation, a Kocher–Langenbeck approach was used in 28 cases, an anterior ilioinguinal approach in 16 cases, a combined anterior and posterior approach in 7 cases. An external fixation was used in two cases (as a wait treatment in two elderly patients with osteoporotic bone). Mehne and Matta plates were used in all cases. AP and Judet oblique radiographs and a CT scan often with 3D reconstructions were taken preoperatively and during follow-up. Clinical results were evaluated according to the Modified Grading System of Merle d'Aubigné, while radiological assessment were analyzed according the Matta X-ray evaluations criteria.

**Results** The mean follow-up was 36 months (12–58 months). Functional results according to the modified scale of Merle d'Aubigné were excellent in 15 cases, good in 29 cases, fair in 9 and poor in 2 cases. According to Matta radiological evaluation, anatomic reduction was excellent in 14 cases, good in 26, fair in 13, poor in 2 cases. There were seven cases of post-traumatic arthrosis of which four were subjected to subsequent THR; two cases of deep venous thrombosis and seven cases of avascular necrosis of the femoral head.

**Discussion** The affecting factors of functional results of complex acetabulum fractures are many: fracture types, associated injuries of the femoral head, timing of surgery, an older age of the patients especially with the presence of osteoporosis, associated ipsilateral lower limb fractures, the presence of dislocation of the femoral head. However in patients who have a complex acetabulum fracture the hip joint can be preserved and post-traumatic osteoarthritis can be avoided only if an anatomical reduction is achieved and in fact the clinical result is related closely to the radiographic result.

**Conclusions** An increase in the rate of anatomical reductions in this type of fracture and the correct timing of the surgical procedure should be the goals of surgeons who treat these complex fractures.

### Acetabular fractures in elderly patients: our experience

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**Introduction** The acetabular fractures in the elderly are characterized by a high variability in terms of types of patients and fracture characteristics. In the elderly, the majority of acetabular fractures are pathological fractures due to the presence of osteoporosis, caused by falling low energy and can occur in unusual way.

**Materials and methods** At A.O. Cannizzaro of Catania from 2007 to 2012, we treated 45 patients with acetabular fractures, over the age of 60 years. Of these patients, 34 were treated surgically (31 patients with ORIF, 3 patients with ORIF more acute PTA) and 11 conservatively. Of the patients treated surgically only 21 were subject to follow-up clinical, radiographic and psycho-functional (SF-12 card), while 9 patients were evaluated only with card SF-12. Of the 31 patients surgically treated with ORIF only 4 needed a second operation of PTA secondary to the development of hip osteoarthritis post-traumatica.

**Results** The range of movement of patients surgically treated with ORIF was similar if compared with contralateral hip or with patients treated conservatively, we witnessed only a modest reduction of internal rotation respect to the contralateral hip. The results of the functional and psychological SF-12 as well as the quality of life were better in patients surgically treated with ORIF compared to those subjected to synthesis more PTA in acute or secondary hip prosthesis for the development of a post-traumatic arthrosis.

**Discussion** The anatomical reconstruction of the acetabulum, as demonstrated in the literature, it is clearly preferable to the prosthetic replacement since it allows to avoid many of the well-known complications due to surgery of the hip prosthesis, although the anatomical reconstruction of the acetabulum can considerably more complex than in the elderly patient for the fracture characteristics that distinguish it. A non-surgical treatment can be justified only if there is no serious breakdown of the acetabulum, or hip subluxation in the absence of traction and in patients with poor general condition.

**Conclusions** In the literature, the treatment of acetabular fractures in elderly patients is very controversial (ORIF vs. arthroplasty in acute vs conservative treatment). In our experience the ORIF represents an excellent treatment option in acetabular fractures in elderly patients and, in patients who do not develop secondary osteoarthritis were documented excellent results both from the clinical point of view that quality of life.

### C03-TRAUMATOLOGY 3

#### Lesser trochanteric avulsion in trochanteric fracture: do we need to fix it in young patients?

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**Introduction** Lesser trochanter avulsions are often associated with a peritrochanteric or intertrochanteric fractures. Aim of this study is to evaluate the possible strength loss after this kind of avulsion in peritrochanteric or intertrochanteric fractures after closed reduction and intramedullary fixation.

**Materials and methods** Patients with a consolidated intertrochanteric fracture associated or not with lesser trochanter avulsion were enrolled respectively in group A and group B. Criteria of inclusion was the achievement of an anatomic reduction with gamma nail and a

complete consolidation of the fracture. Criteria of exclusion were: a follow-up shorter than 1 year and age over 65 years old at surgery. Patients were retrospectively review for the purpose of this study. Range of motion, modified Harris hip score (HHS), flexion strength with hip in neutral position and at 90° of flexion were evaluated on injured and healthy side. On the X-rays the displacement of the lesser trochanter was calculated.

**Results** Group A and B showed no statistical difference in age and follow-up. No statistical difference between the two groups was found in range of motion, mean mHHS, hip flexion strength at 90° of hip flexion. Lesser trochanter avulsion group showed a significantly reduced strength in flexion with hip in neutral flexion (mean difference between two groups was 18.5 N). Lesser trochanter displacement showed a significant correlation with strength at 90° of flexion.

**Discussion** Only one study has been published regarding this topic but it presents several limits and lacks of statistical analysis.

**Conclusions** Our results suggest that, although an avulsion of the lesser trochanter in a trochanteric fracture leads to a significant loss of strength, the strength reduction is limited and fixation of the lesser trochanter should be performed only in high demanding patients.

#### Risk of mortality related to proximal femur fractures in elderly

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**Introduction** Fractures of proximal femur are frequent in the elderly. Literature reports 12–36 % risk of mortality within first post-operative month. The objective of this study is to highlight correlations between many variables and risk of mortality, in patients registered on Varese provincial and hospital database.

**Materials and methods** 69–99 years old patients with primary (not pathological) proximal femur fracture were included. Assessment was based on demographic (age, sex, marriage), anamnestic (co-morbidities, Charlson index score, smoking, alcohol abuse, ASA score, BMI) and treatment aspects (hospital, treatment choice, surgery and duration of hospital stay, anesthesia). Correlation between variables and risk of mortality was examined by the means of Kaplan–Meier Survival Graphs and Cox Proportional Hazards Analysis.

**Results** Eight hundred and twenty-eight cases of Varese provincial database were included: risk of mortality increased in 84–99 years old male patients with Charlson index score >1. No significant correlations were documented with other examined aspects. One hundred and ninety persons in Ospedale di Circolo di Varese database were included: risk of mortality increased in 84–99 years old male patients who underwent surgery after 48 h. Hypertension and diabetes increased the risk of mortality, while cardiovascular co-morbidities reduced it.

**Discussion** Some factors are highlighted in both databases: age, sex, co-morbidities considerably influence risk of mortality in patients with proximal femur fractures. Results about influence of cardiovascular co-morbidities are controversial: it could reasonably stated that this group of patients undergo continuous monitoring of the health status even before surgery, reducing peri-operative complication rate.

**Conclusions** Risk of mortality due to proximal femur fracture increase in old patients with co-morbidities: early treatment is essential in order to reduce complications.

## **DICHIARAZIONE SOSTITUTIVA DI ATTO DI NOTORIETÀ**

(Artt 19 e 47 del D.P.R. 28.12.2000, n. 445)

Il sottoscritto Dott. Fulvio Carluzzo, nato a Butera (CL) il 18/11/1974 e residente a Catania (CT) in Via S. Quasimodo n. 2, consapevole che ai sensi del D.P.R. 445/2000, dichiarazioni mendaci, formazione o uso di atti falsi sono puniti ai sensi del codice penale e delle leggi speciali in materia,

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Catania, 18 Ottobre 2021

FIRMA  
