

Presented at the AOFAS meeting, Chicago, USA 2014

**Title: Preliminary Experience With Carbofix - Radiolucent Distal
Fibula
Plate In Ankle Fractures**

Author(s): Pietro Maniscalco

Category: Ankle

Abstract:

Introduction: Ankle fractures cover a big part of traumatology and are increasing for road and sport's injuries. Although we have made significant progress in care and treatment of these injuries, when we treat surgically ankle fractures we are faced with many worries. Fractures are usually multiplanar and x-ray devices, giving a mono-planar view, don't allow the surgeon to fully understand how the fracture is expressed. The aim of study is compare the average timing of surgery with traditional plate (not Radio Lucent) implant versus those with Radio Lucent plates (CarboFix plate).

Methods:

From July 2012 to September 2013 in our Traumatologic Department 43 patients were surgically treated for ankle fractures: all of them required the implant of a plate and screws for lateral malleolus fracture. In 14 male and 12 female patients, in totally 26 radiolucent plates were implanted. The average age of these patients was 57,3 years old (range 19-78). Eleven of these 26 patients had a clinical indication of tri-malleolar fractures, 12 was bi-malleolar fractures and 3 mono-malleolar fractures. The follow-up evaluations were at 30,60,90 and 120 days after surgery. During follow up a clinical and radiographic evaluation have been assessed, investigating especially pain and range of motion after ankle immobilization and the period of fracture healing, according to x-rays criteria. In 2 cases the osteosynthesis carbofix device has been removed: one patient presented a skin discoloration near fracture site. To avoid the risk of an allergic or inflammatory reaction the plate was removed and tissue near lesion was sent to anatomic-pathologic department.

Results:

Seventeen patients were treated with a traditional not radiolucent plates: 6 mono- malleolar, 5 bi-malleolar and 6 tri-malleolar fractures; instead twenty-six were treated with CarboFix plates: 3 mono-malleolar, 12 bi-malleolar and 11 tri-malleolar fractures. The average time of surgery were 49.2 minutes with traditional plates and 40.1 minutes with CarboFix plates for tri-malleolar fractures; 40.4 minutes with traditional plates and 37.2 minutes with CarboFix plates, for bi-malleolar fractures, and 32.4 minutes with traditional plates and 35.2 minutes with Carbofix plates, for monomalleolar fractures. Anatomic-pathologic images of tissue from patients in which carbofix plate has been removed show rich blood component and some fibroblast cells poorly interpreted as inflammatory reaction.

Conclusion:

Since July 2012, at the Orthopaedics and Traumatology Department of Piacenza - Italy, for bi-malleolar and tri-malleolar fractures the Carbofix Distal Fibula Plates is used. The plate is made of numerous endless longitudinal carbon fibers embedded in PolyEtherEtherKeton. This material give to the osteosynthesis device: -Elastic modulus close to that of cortical bone -High mechanical properties -Radiolucent to X-rays – no artifacts during CT and MRI scans -Good visibility through the plate during the surgery and follow up Interesting is the data concerning the timing of the average duration of surgery in three and bi malleolar fractures; a good visualization of fragments permits a less use of x-ray that trasleted in less operative time. The identifications of non-inflammatory peri-lesional tissue, after 1 year and a half after the fracture, indicates that CarboFix plates does not cause inflammation or negative reaction against the fracture.