Pragmatic Treatment of Ankle Fractures of Uncertain Stability: Clinical Features and Risk of Displacement

Presenting:
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Summary:
One hundred and fifty-two patients with undisplaced but potentially unstable malleolar fractures (using clinical criteria) were managed in weight-bearing casts or braces. The risk of displacement was 2%. One patient had a medial malleolar non-union. This is a simple, low-risk method of managing undisplaced, potentially unstable malleolar fractures

Abstract:
Introduction
Biomechanical and clinical studies have demonstrated that the most important determinant of treatment of malleolar fractures is stability. Stable fractures have an intact deep deltoid ligament, do not displace with functional treatment and weightbearing, and do not require radiological follow-up. If the deep deltoid/medial malleolar complex is disrupted, a malleolar fracture may display instability, including displacement of the talus in the ankle mortise. However, several studies have suggested that some malleolar fractures that are undisplaced on presentation are unstable and may displace during treatment.

Recent studies have focused on the role of stress radiography or MR scanning to assess stability. Prior to the publication of these studies, we developed clinical criteria for potential instability and applied them in a pragmatic way to a prospectively selected series of patients. These included: a medial clear space of < 4mm and none of these criteria were considered to have stable fractures, while those with a medial clear space of >4mm were considered to have a displaced fracture.

Methods
This is a prospective study of 152 consecutive skeletally mature patients with undisplaced, potentially unstable malleolar fractures treated by the senior author between 1st January 1998 and 31st December 2007. During the same period we treated 237 stable fractures and 110 displaced fractures. Patients were treated in a below-knee walking cast (136 patients) or a functional ankle brace (16 patients) for six weeks. Weightbearing was encouraged throughout. Weightbearing radiographs were obtained at one week and six weeks. Displacement was defined as talar displacement with a medial clear space >4mm. Demographic, clinical and radiological data were collected prospectively.

Results
There were 88 male and 64 female patients, with a median age of 43 years (range 14-93 years). Criteria for suspicion of instability were: lateral malleolar fracture with medial tenderness, 115 patients; proximal fibular fracture, 29 patients; bimalleolar fracture, 17 patients; other criteria, 15 patients (some had more than one criterion). Three fractures displaced (risk of displacement 2.0%, 95% CI 0.4-5.7%). All displaced within the first week and were treated by open reduction and internal fixation. One bimalleolar fracture developed a symptomatic medial malleolar non-union which was treated by percutaneous screw fixation (risk of non-union 5.9%, 95% CI 0.1%-28.7%). All the other fractures achieved clinical union by 8 weeks.
Discussion
It is possible that some of these fractures were stable enough to treat more functionally. However, patients were satisfied with the treatment programme which avoided painful and time-consuming stress radiography. In other series some of these patients would probably have had surgical fixation but this programme avoided the risks of wound infection and nerve injury which may be 10% or higher. The best method of assessing and treating these patients is not yet known – this method has the advantages of simplicity with minimal risk.