

## Weightbearing Radiographs Vs. Gravity Stress Radiographs For Stability Of Supination External Rotation Fractures Of The Ankle

Trauma / Foot & Ankle Trauma / Conservative Treatment & Rehabilitation

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Keywords: Ankle, Fracture, Stability, Weightbearing Radiographs, Gravity Stress,

### Background

Isolated lateral malleolar fractures may result from a supination-external rotation (SER) injury of the ankle. Stable fractures maintain tibiotalar congruence due to competent medial restraints including the deltoid ligament. They can be treated nonoperatively with excellent functional results and long-term prognosis. Unstable fractures include a deltoid ligament rupture and are assumed to benefit from operative treatment. Stability can be assessed with either stress radiographs or weightbearing radiographs.

### Objectives

The goal of this study was to compare these radiographs to predict functional outcome.

### Study Design & Methods

A consecutive series of patients with closed isolated lateral malleolar fractures (presumed AO 44-B1, Lauge-Hansen SER type) were prospectively enrolled from September 2008 to August 2015. Patients with clearly unstable fractures (laterally displaced talus) as seen on the initial gravity stress were excluded. All patients were examined with a weightbearing anteroposterior radiograph of the ankle 3 to 7 days after trauma. A medial clear space more than 4 mm or 1 mm wider than the superior clear space was defined "unstable". If a fracture was unstable in both radiographs operative fixation was advised. All non-operatively treated patients were seen for clinical and radiographic follow-up 1 to 2 years after trauma

### Results

Out of 104 patients with isolated lateral malleolar fractures of the SER type, 14 patients were treated operatively because of clear instability, 45 demonstrated instability on the gravity stress but stability on the weightbearing radiograph (g-unstable), 45 were stable on both radiographs (g-stable). All were treated nonoperatively. At average follow-up of 20 months no significant differences were seen in the AOFAS hindfoot score (92 points g-stable group vs 93 points g-unstable group), the FFI score (11 vs 10 points), the SF-36 physical component (86 vs 85 points) and SF-36 mental component (84 vs 81 points). Radiographically all fractures had healed with anatomic congruity of the ankle.

### Conclusions

Weightbearing radiographs are a reliable method to evaluate the stability for non-operative treatment in isolated lateral malleolar fractures of the SER type with excellent clinical and radiographic outcome at short-term follow-up. Even in the patients that were unstable in the gravity stress but stable in the weightbearing radiograph no failures arose. Ankle varus alignment and a pronounced trochlea tali may provide further stability even when the

ligamentous restraints are incompetent. Weightbearing radiographs reflecting the physiological load condition may therefore prevent unnecessary operative treatment.