

Syndesmotic Malreduction Results in Poorer Clinical Outcomes in Supination and Pronation External Rotation IV Ankle Fractures

Richard M. Hinds, MD; Patrick C. Schottel, MD; Matthew R. Garner, MD;
David L. Helfet, MD; Dean G. Lorich, MD;
Hospital for Special Surgery; New York, New York, USA

Purpose: The purpose of this study was to compare the functional outcomes of postoperative supination and pronation external rotation (SER and PER) IV ankle fractures in patients with and without syndesmotic malreduction.

Methods: A prospectively created clinical registry of ankle fractures surgically treated from 2004 to 2010 was reviewed. Inclusion criteria included unilateral SER IV or PER IV ankle fractures (AO/OTA 44-B), patient age at time of surgery ≥ 18 years, preoperative ankle radiographs and MRI, postoperative bilateral ankle CT scans, and follow-up of 1 year including Foot and Ankle Outcome Score (FAOS). All patients with CT evidence of articular malreduction were excluded. 86 patients were ultimately included for analysis. Each ankle was assessed on axial CT scan for syndesmotic malreduction at a level approximately 1 cm proximal to the tibial plafond using a novel syndesmotic malreduction assessment method recently described by Davidovitch et al (Figure 1). Designation of syndesmotic malreduction was conferred if any one of the three measurements (anterior tibial incisura distance [AI], posterior tibial incisura distance [PI], or anterior translation distance [AT]) demonstrated a difference greater than 2 mm between the injured ankle and the uninjured ankle.

Results: 63 of the 86 patients (73%) demonstrated syndesmotic malreduction. These patients demonstrated a clinically significant reduction in the FAOS Sport subcategory (58 vs. 73; $P = 0.064$) compared to the 27% (23/86) with a reduced syndesmosis. No clinically or statistically significant differences were observed between patients with and without syndesmotic malreduction in the remaining FAOS subcategories. Demographic, medical comorbidity, injury severity, and postoperative complication comparison between the syndesmotic malreduction and reduction cohorts showed no statistically significant differences.

Conclusion: SER IV and PER IV ankle fractures with syndesmotic malreduction demonstrate poorer clinical outcomes than those without syndesmotic malreduction. However, the high syndesmotic malreduction rate and lack of a statistically significant difference between cohorts may represent an overestimation of malreduction utilizing this method. Regardless, we recommend exercising extreme care in performing open reduction and internal fixation of these ankle fractures to improve a surgeon-dependent variable influencing postoperative outcomes.

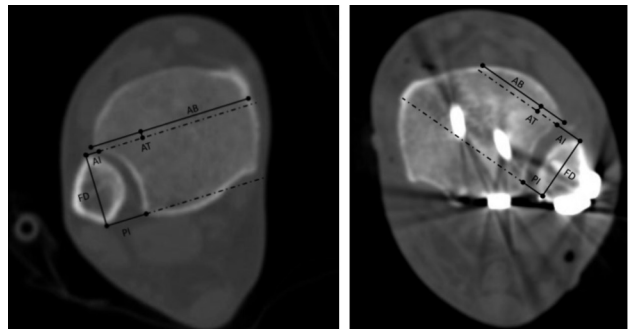


Figure 1. Syndesmotic malreduction assessment on axial CT utilizing a novel method.