

Mid-Term 5-Year Follow-up of a Novel Algorithm for Nonoperative Weber B Ankle Fractures

Edward Rooney, MD; Fred Finney, MD; Paul Talusan, MD; James R. Holmes, MD; David Matthew Walton, MD

University of Michigan, Ann Arbor, MI, United States

Purpose: Several different radiographic guidelines have been used to understand the stability of lateral malleolus fractures. The current authors previously described a novel algorithm used to assess stability and the ability to treat the stable injuries nonoperatively. One year results demonstrated favorable outcomes of these nonoperative patients; however, there is a question about the durability of these results and whether these patients developed posttraumatic degenerative changes. We hypothesize that 5-year outcome scores will not degrade over time (as compared to 1-year scores) and there will be no signs of significant osteoarthritis on follow-up radiographs.

Methods: An observational study based on a previous cohort of 51 patients studied from 2010 to 2013 with isolated Weber B ankle fractures was performed. These were defined as stable at the time of injury when the medial clear space (MCS) was less than 7 mm on the initial gravity stress radiographs along with a normal mortise relationship on weight-bearing radiographs. 27 patients who were treated nonsurgically were brought back for a mid-term follow-up with a mean of 6.8 years. American Orthopaedic Foot & Ankle Society (AOFAS) Hindfoot scores, Olerud-Molander Ankle (OMA) Score, and visual analog scale (VAS) pain score were collected in accordance with the prior study. Patient-Reported Outcome Measurement Information System (PROMIS) scores were also collected including lower extremity, physical function, depression, and pain interference. Standing bilateral ankle radiographs were obtained, and assessed for MCS widening, and ankle arthritis using the Kellgren-Lawrence grading scale.

Results: Average functional score results were (in comparison to 1-year outcomes): AOFAS Hindfoot, 95.7 (93.2); OMA Score, 95.2 (91.0); and VAS pain score, 0.24 (0.57). Using a Wilcoxon Signed Rank Test, there was a statistically significant increase in 5-year AOFAS Hindfoot scores as compared to 1-year scores in those same patients ($P = 0.005$) There is no evidence of significant posttraumatic osteoarthritis based on the Kellgren- Lawrence grading scale.

Conclusion: The previously described, novel at the time, algorithm for assessing stability of isolated Weber B ankle fractures and nonsurgical treatment with protected weight bearing has been shown to produce excellent results for mid-term follow-up with an average of 6.8 years. Additionally, these patients are not at increased risk for rapid progression of posttraumatic osteoarthritis. This further supports initial weight-bearing radiographs as a reasonable assessment of ankle stability and validates the aforementioned algorithm as a safe and cost-effective functional treatment regimen.