

High Complications and Low Return to Work After Gustilo Grade III Open Pilon Fractures: A Secondary Analysis of the OUTLET Study

Suman Medda, MD; Rachel Seymour, PhD; Lisa Reider; Michael J. Bosse, MD; Susan M. Odum, PhD; Reza Firoozabadi, MD; Joshua L. Gary, MD; Wade T. Gordon, MD; Clifford B. Jones, MD, FIOTA; Saam Morshed, MD, PhD; David C. Teague, MD; Madhav A. Karunakar, MD; and METRC

Purpose: We examined the clinical and functional outcomes of patients with Gustilo grade III open pilon fractures prospectively followed in a multicenter cohort study and identified patient and injury factors associated with poor 18-month outcomes.

Methods: 193 patients with grade III open pilon fractures were enrolled and prospectively followed. 17 patients with amputation within the first 6 weeks following injury were excluded and this secondary analysis of the OUTLET study included 176 patients with a grade III open pilon fracture (43B: 14%; 43C: 86%). Outcomes included complications, 18-month ambulatory status, return to work, and Short Musculoskeletal Function Assessment (SMFA). Multivariable regression was used to examine the association between patient and injury characteristics and SMFA dysfunction score.

Results: The average age was 42 years, 64% were male, and 44% were smokers. Gustilo type included 78% IIIA, 21% IIIB, and 1% IIIC. 62% of patients were treated with internal fixation, 16% with external fixation, and 22% with both. 24 patients required delayed primary closure, 30 required split-thickness skin grafting, and 37 required a free or rotational flap. 71 patients (40%) reported complications, including 26 (15%) deep surgical site infections, 34 nonunion (19%), 13 (8%) additional wound complications, and 3 (2%) delayed transtibial amputations (mean = 101 days). While 151 patients (85.8%) returned to pre-injury weightbearing status, 34% used an assistive device at 18 months. At 18 months, 29% returned to their previous level of work and 44% of patients returned to any level of work. Female sex, severe bone loss, lower social support, work-related injuries, and external fixation were significantly associated with lower SMFA dysfunction scores.

Conclusion: High rates of complication and disability persist 18 months after grade III open pilon fracture, with 34% of patients using assistive devices and only 44% returning to work.