

Salvage and Stabilization of Limb-Threatening Ankle Trauma in Comorbid, Minimally Ambulatory Patients Utilizing a Retrograde Hindfoot Nail

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Purpose: Limb salvage after major periarticular ankle trauma (ie, open ankle fracture, type C pilon fracture) in the comorbid, low-demand patient is fraught with complication when utilizing conventional treatment strategies. The aim of this study was to evaluate an unconventional treatment alternative that utilizes a hindfoot fusion nail as the stabilization for limb salvage in these hosts.

Methods: In an IRB-approved retrospective study, the charts and imaging of patients who received a retrograde hindfoot nail from January 1, 2010 to January 1, 2015 were evaluated. These patients possessed one or more “vulnerability factors” that have been previously associated with poor traditional fixation outcomes: (1) age >65 years, (2) morbidly obese (body mass index [BMI] >40), (3) extensive soft-tissue compromise or open/impending open injuries, (4) peripheral vascular disease or diabetes, (5) age-adjusted Charlson Comorbidity Index (ACCI) of 6 or above, corresponding with a 2.25% 10-year survival rate, (6) tibial plafond or other comminuted injury pattern. These patients underwent hindfoot nailing without joint preparation, except in cases where debridement was indicated secondary to open fracture care. Our primary outcome was procedure success, defined as remobilization to baseline ambulatory status without amputation. Secondary outcomes included clearance to weight bear as tolerated, surgical site complications, 90-day readmissions, and amputation rate.

Results: A total of 34 patients met at least one of our inclusion criteria, with an average of 3.3 ± 1.2 criteria met. Their mean age was 75.3 ± 16.9 years (70.6% geriatric, defined as ≥ 65 years of age) and mean BMI was 30.8 ± 10.1 (20.6% morbidly obese, with BMI >40). Of the 26 patients who were not 90-day mortalities or amputations, 23 (88.5%) had successful outcomes. Average time until full weight bearing was 64.7 ± 27.5 days. Two patients (5.9%) required amputations, both from infections (3 total infections, 8.8%). Of the 15 patients who were ambulatory preinjury, 14 (93.3%) were cleared to weight bear as tolerated and returned to ambulation. Eight patients (23.5%) were readmitted within 90 days of stabilization, although only 3 of these were orthopaedic-related.

Conclusion: Use of a hindfoot fusion nail is an effective treatment alternative in sicker, minimally mobile patients after major orthopaedic trauma. This method is associated with an acceptable complication rate, as well as a rapid return to functional capability.