

Does Hindfoot Nailing Decrease Unplanned Return to the Operating Room After Geriatric Open Ankle Fracture?

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Purpose: The optimal treatment for open ankle/pilon fractures in geriatric hosts should be a surgical procedure that stabilizes the soft tissues, promotes early mobilization, and can serve as a reliable form of definitive fixation with minimal risk of subsequent surgeries. Current management strategies do not reliably achieve these goals. We sought to determine the risk factors for an unplanned return to the operating room (OR) after a geriatric open ankle fracture and the difference in the host demographics, outcomes, and postoperative mobilization rate of patients who underwent hindfoot nail (HFN) versus open reduction and internal fixation (ORIF).

Methods: A retrospective analysis of patients 60 years of age and older treated for a low-energy open ankle or pilon fracture (AO/OTA types 43 and 44) by a single academic department at two Level I trauma centers from January 1, 2007 to September 1, 2019 was performed. Our primary outcome was an unplanned return to the OR, defined as any procedure that was not considered a part of the definitive fixation plan. A multivariable logistic regression was performed using factors associated with an unplanned return to the OR with a P value <0.1 on univariate analysis using either Fisher's exact test for categorical comparisons or Student's t test for continuous comparisons. Demographics, injury characteristics, and postoperative complications and remobilization were also compared between ORIF and HFN. In all cases a P value <0.05 was considered significant.

Results: A total of 96 patients (60 ORIF, 36 HFN) met our inclusion criteria (mean age 75.3 ± 10.1 years). In total, 17 patients underwent an unplanned return to the OR (17.7%). 9 patients (9.4%) developed deep infections, and 4 (4.2%) went on to nonunion. Patients who underwent HFN were older (ORIF 71.1 ± 8.4 , HFN 81.2 ± 10.1 , $P < 0.0001$) and had higher age-adjusted comorbidity scores as measured with the Age-Adjusted Charlson Comorbidity (ORIF 4.9 ± 2.0 , HFN 6.3 ± 2.0 , $P = 0.003$). However, unplanned return to OR was more common after ORIF (15 of 60, 25%) than HFN (0 of 36, 0%, $P = 0.02$), and deep infections were also more likely after ORIF (9 of 60, 15.0%) than HFN (0 of 36, 0%; $P = 0.02$). In addition, male sex (odds ratio [OR] 4.48, 95% confidence interval [CI] 1.34 to 16.26) and Gustilo Type III open fracture (OR 4.73, 95% CI 1.39 to 18.64) were found to be significant predictors of an unplanned return to the OR with an area under the receiver operating characteristic curve of 0.84.

Conclusion: Single institution analysis of geriatric low-energy open ankle/pilon fractures suggests that both deep infection and an unplanned return to the OR are significantly less frequent following HFN when compared to ORIF. While a larger sample size analysis and patient-reported outcomes are necessary, HFN is proposed as an alternative to ORIF in elderly, comorbid patients with an open ankle fracture in whom a single definitive surgery is preferred.

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.