Can We Identify Risk Factors for Fracture-Related Infection Following a Rotational Ankle Fracture?

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Purpose: The purpose of this study was to identify risk factors for fracture-related infection (FRI) following ankle fracture surgery.

Methods: Retrospective chart review was performed on a consecutive series of ankle fracture surgery patients identified from a prospective IRB-approved trauma database. Included patients met the following criteria: (1) open or closed rotational ankle fracture definitively treated with internal fixation, (2) development of a suggested or confirmed FRI based on the AO consensus statement, and (3) age >18 years. Baseline demographics, medical history, and injury information including classification and wound complication type were collected. A control cohort was matched at a 2:1 ratio to the FRI cohort as a comparison group, and the 2 groups were statistically compared. Binary logistic regression analysis was performed to determine risk factors for developing an ankle FRI.

Results: Out of 1678 patients who were treated operatively for a rotational ankle fracture, 47 (2.80%) had suggestive or confirmed FRI at an average of 19 days postoperatively. FRI patients were more likely to have a history of diabetes (P = 0.003), be of White race (p=0.002), and have a history of smoking or drug use (P = 0.001, P = 0.002). However, there were no differences in OTA classification type (P = 0.968) or dislocation at time of initial injury (P = 0.943) between the FRI and non-FRI cohorts. FRI patients were more likely to have had an open fracture (P<0.001) and history of external fixation prior to definitive fixation (P = 0.007). Binary logistic regression demonstrated that prior or current drug use (odds ratio [OR] 1.912, confidence interval [CI] 1.767-25.929) and open fracture (OR 1.694, CI 1.487-19.902) were associated with an increased risk of FRI after ankle fracture surgery.

Conclusion: Rotational ankle fracture patients of White race with history of diabetes, smoking, or drug use, and who have an open fracture at initial presentation are at increased risk of developing an FRI in the postoperative period. These patients should be appropriately counseled, and potentially indicated for earlier return to the operating room for irrigation and debridement in order to mitigate a more severe infection.