

The Not So Simple Ankle Fracture: A Strict Assessment of Complications Following Open Reduction and Internal Fixation of Rotational Ankle Fractures

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Purpose: The primary aim of this study was to investigate the incidence and spectrum of complications associated with open reduction and internal fixation (ORIF) of rotational ankle fractures. A secondary aim of this study was to identify patient demographic factors, medical comorbidities, and injury characteristics associated with these complications.

Methods: All patients who underwent ORIF for rotational ankle fracture at one institution over a 10-year period with a minimum follow-up time of 6 months were reviewed. Data on patient factors (e.g., age, sex, body mass index [BMI], Charlson comorbidity index [CCI], smoking status), injury characteristics (e.g., mechanism of injury, open versus closed fracture, Lauge-Hansen classification), surgical procedures, and outcomes were analyzed. All issues that required any deviation from the normal postoperative routine or affected patients in any negative way were considered a “complication.” These included postoperative sensory deficits, hardware failure, suspected and confirmed fracture-related infection (FRI), and fracture nonunion.

Results: A total of 681 patients was included with a mean follow-up time of 16 months. There were 245 (36.0%) males and 436 (64.0%) females, with an average age of 48.9 years. There were 37 (5.4%) OTA 44-A, 516 (75.8%) 44-B, and 128 (18.8%) 44-C fractures. The most common Lauge-Hansen fracture type was SER IV, occurring in 67.8% of cases. Overall, a complication developed in 175 patients (25.7%), with suspected FRI (6.8%) being the most common. Rates of nonunion and confirmed FRI were lower at 2.2% and 3.8%, respectively. The overall reoperation rate was 21.7%, including 133 (19.5%) cases of hardware removal.

Multivariate analysis revealed a significant association between initial open fractures and overall complication rate ($p = 0.006$). The need for eventual hardware removal was associated with open fracture ($p = 0.007$) and younger age ($p = 0.01$). Fracture nonunion was associated with open fracture ($p = 0.004$) as well.

Conclusion: The overall postoperative complication rate following ORIF for rotational ankle fractures, using very strict criteria, was 25.7%. Complications were highly associated with open fractures.