Lower Implant Removal Rates Occur Following Posterolateral Antiglide Fixation for Distal Fibula Fractures

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Purpose: Distal fibula fractures are a common injury, often requiring surgical management, and multiple surgical fixation techniques are used. Biomechanical studies have shown antiglide plating to be superior to lateral plating. However, lateral plating remains the most commonly performed technique. This study sought to compare the outcomes of posterolateral antiglide fixation for distal fibula fractures with those of lateral plating, dual plating, locking plate fixation, and intramedullary fixation. We hypothesized that the antiglide plating technique will have lower rates of implant removal, wound complications, and infection.

Methods: A multicenter retrospective observational cohort study was performed using data collected from a large healthcare data repository. Eligible patients were 18 years and older with an isolated ankle fracture that underwent surgical fixation from July 1 to December 31, 2016, and July 1 to December 31, 2019. Patients had at minimum two follow-up visits postoperatively. Those with multiple injuries, open fractures, pathologic fractures, and preexisting ankle implants were excluded. Radiographic and chart reviews were performed on included patients. Chi-squared, ANOVA, Kruskal-Wallis rank sum, t-tests, and Fisher's exact tests were used, as appropriate.

Results: This study included 1525 patients (mean age 47 years [SD = 17.2], 55.9% female). Lateral plating was the most common technique (74.2%). Secondary surgery for implant removal was performed on 364 patients (23.8%). Pain was the most frequent reason for secondary surgery for implant removal. The rate of implant removal was lowest with antiglide plating (9.9%) compared to lateral plate (18.7%) and other fixation methods ($p = 0.004$). The odds ratio of implant removal for lateral plating and locked plating versus antiglide plating was 2.2 (CI: 1.4–3.5) and 2.5 (CI: 1.2–5.2), respectively. The rate of antibiotic use was lower in antiglide plating (27.4%) than lateral plating (30.9%; $p = 0.001$).

Conclusion: Lateral plating continues to be the most commonly used method of distal fibular fixation. The implant removal rate was similar to previously published rates. Posterolateral antiglide plating had the lowest rate of implant removal and was more than two-times less likely to be removed compared to lateral plating.