Buttress Plating or Trans-Syndesmotic Stabilization for Posterolateral Malleolus Fractures: An Analysis of Weightbearing Status and Complication Profiles. A Decade of Experience From a Level I Trauma Center

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Purpose: This study aims to determine the complication profile and weightbearing status of patients undergoing surgery for ankle fractures involving the posterolateral malleolus treated with either buttress plating or trans- syndesmotic stabilization.

Methods: A retrospective analysis of a prospective trauma database for patients at a Level I major trauma center undergoing fixation of ankle fractures, including a posterior malleolar fragment, between January 2012-June 2021 was conducted. All imaging was reviewed and electronic patient records were used to identify the postoperative weightbearing status, duration of follow-up, and complications. Postoperative complications were categorized as infection, loss of articular reduction, revision surgery, removal of metalwork, and subsequent ankle fusion. Patients were followed until discharge from clinic or death.

Results: 1283 patients with ankle fractures were identified. 445 of these had fractures involving the posterior malleolus. Following exclusions (including follow-up <8 weeks and management other than buttress plating/trans-syndesmotic stabilization) 295 patients were included. 184 underwent posterior buttress plating; 111 had trans-syndesmotic stabilization with screws or flexible “tightrope” fixation. There were no statistically significant differences in group demographics. Fractures treated with buttress plating more frequently had a preoperative CT (53.3% vs 28.8%, P<0.001) and involved more of the articular surface than the syndesmotic stabilization group (27.9% vs 15.9%, P<0.001). The syndesmotic stabilization group was more likely to undergo removal of metalwork (37.8% vs 10%, P<0.001). There were no statistically significant differences in other complications. In patients with documented postoperative weightbearing status, the buttress plating group were more likely to immediately weight-bear postoperatively (69/165 vs 24/105, P = 0.001).

Conclusion: Patients treated with buttress plating had a larger posterolateral malleolar fragment than those treated with trans-syndesmotic stabilization, but with comparable complication profiles and a lower incidence of hardware removal. The buttress plating group were also more likely to be allowed to weight-bear during the immediate postoperative period. Based on our results, this study advocates a more liberal use of buttress plating in patients with fractures involving the posterior malleolus.