Posterolateral Plating Is a Safe Alternative for the Treatment of Distal Tibia Fractures

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Purpose: Distal tibia fractures are typically treated with nails if enough purchase can be obtained, or medial or anterolateral plates for more distal fractures. A less common approach is to plate the tibia posteriorly using an anatomically contoured plate. Although there are theoretical advantages to plating under the robust soft-tissue envelope of the posterior tibia, the outcome and safety of this treatment have not yet been described. We hypothesized that plating the posterior tibia would be associated with an acceptable complication profile.

Methods: 80 consecutive patients with fracture of the distal tibia were treated with an anatomically contoured 3.5-mm T-shaped locking compression plate using a posterolateral approach between January 2008 and April 2018 at a single Level-I trauma center. The mean age of the study group was 47 years (standard deviation [SD]: 15), 63% were male, 49% had open fractures, and 31% were polytrauma patients. 11 fractures were AO/OTA type 42, 24 were AO/OTA type 43A, and 45 were AO/OTA type 43C. 67 patients were treated with an initial spanning external fixator and staged open reduction and internal fixation (ORIF) and the median time in external fixation for these patients was 25 days (interquartile range [IQR]: 15-53). The primary outcome of interest was unplanned reoperation due to hardware failure, nonunion, infection, or hardware prominence.

Results: The overall risk of unplanned reoperation was 17% (13/80). Of the 13 patients who required reoperation, 5 reoperations occurred due to nonunion or malunion (6%), 3 due to infection (4%), 3 due to infected nonunion (4%), and 2 due to hardware prominence (3%). According to the documentation at the follow- up visits, alignment was lost in 2 patients. One patient developed a nonunion in 11° varus and 12° recurvatum, and 1 developed a malunion in 21° varus and 19° recurvatum. Both patients required revision surgery. No plate breakage occurred in any patients during the follow-up period. One patient who required an unplanned reoperation due to infection had a persistent infection before the posterolateral placement of a contoured plate. The median time to reoperation was 221 days (range, 22-436). Only 1 complication, a case of wound dehiscence, was noted due to the posterolateral approach.

Conclusion: Use of a posterolateral approach with a precontoured locking compression T-plate for the treatment of distal tibia fractures led to reasonable outcomes at our institution with an acceptable risk of unplanned reoperation, even with a high proportion of open fractures that were commonly staged with external fixation. Surgeons may consider this as a reasonable treatment option in these difficult patients, particularly in open distal fractures that are difficult to plate from the front due to soft-tissue concerns.