Extreme Nailing: Is It Safe to Allow Immediate Weight Bearing of Extra-Articular Distal Tibia Fractures (OTA 43-A) Treated with Intramedullary Fixation?

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Purpose: This study was conducted to evaluate whether immediate weight bearing after intramedullary (IM) fixation of extra-articular distal tibia fractures (OTA 43-A) resulted in loss of fixation or change in alignment at union.

Methods: After IRB approval, our prospectively collected database was retrospectively reviewed for all isolated extra-articular distal tibia fractures within 7.5 cm (<3 in) of the distal tibial articular surface (OTA 43-A) treated by IM fixation and distal locking with 5-mm screws between July 1, 2005 and June 30, 2015. 98 fractures in 94 consecutive patients were identified. 18 were excluded for follow-up <6 months and 26 for concurrent lower extremity injuries that prevented or limited immediate weight bearing. 51 fractures in 50 patients were included in the final analysis. All patients were allowed to bear weight immediately with full body weight in an off-the-shelf boot. The age, sex, comorbidities, injury pattern, fixation construct, follow-up length, subsequent procedures, complications, initial anterior distal tibial angle (aDTA), initial lateral distal tibial angle (lDTA), final aDTA, and final lDTA were recorded. All fractures, including those with implant revision for complications, were included in the final analysis.

Results: 44.4% of patients were female and the average age was 47.0 ± 16.4 years. Average follow-up was 26.2 months (range, 12.0-114.5). Fractures were classified as OTA 43-A1 for 17, OTA 43-A2 for 18, and OTA 43-A3 for 16. 37% of fractures were open and 18.5% were placed into an external fixator, on average 6.6 ± 4.5 days before definitive fixation. All fractures were fixed with at least one anteroposterior (AP) and one mediolateral (ML) screw and 94% underwent distal fixation with 3 interlocking screws (2 ML, 1 AP). 48% (n = 26) of fractures had lateral column support (16 fibula plated, 2 fibula IM rod, 8 intact fibula). Average initial lDTA and aDTA were 88.7° ± 2.8° and 84.7° ± 3.5°, respectively. Average change from initial angulation at final follow-up was 0.5° ± 1.5° of varus and 0.4° ± 2.8° of extension. 3.7% required free flap coverage and 7.4% underwent staged grafting secondary to bone loss. 18.5% had an unplanned return to the operating room (9.3% for infected nonunion requiring hardware exchange, 5.5% for infection requiring debridement without hardware revision, and 3.7% for aseptic nonunion).

Conclusion: Immediate weight bearing following IM fixation of extra-articular distal tibia fractures (OTA 43-A) did not lead to loss of fixation or change in alignment at union. Regard-

See pages 49 - 106 for financial disclosure information.

less of the typical complications surgeons may encounter in the management of distal tibia fractures, based on our data, we believe that immediate full weight bearing after IM nail insertion can be reliably employed for distal tibia fractures where a minimum of 3 locking screws may be employed.