

Medial Column Support in Pilon Fractures With Metaphyseal Comminution Using Percutaneous Intramedullary Large Fragment Fixation

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Purpose: Pilon fractures with metaphyseal comminution are a complex problem, in which providing adequate stability is paramount while effectively managing the soft tissues. Medial column support with precontoured locking plates can be morbid in open fractures or tenuous soft-tissue envelopes whereas inadequate fixation can result in fixation failure. Here, a technique for medial column support in pilon fractures with metaphyseal comminution using percutaneous large fragment fixation is presented.

Methods: A 54-year-old female sustained an open complete articular pilon fracture (Fig. 1A, AO/OTA 43C) with a medial soft-tissue wound, as well as an associated fibula fracture. The day after injury she underwent debridement of the open fracture, ankle-spanning external fixation, limited internal fixation with mini-fragment lag screw fixation of the tibial metaphysis, and bridge plating of the fibula (Fig. 1B). She had a segmental metaphyseal defect. Six days later, she underwent definitive fixation. The articular surface was reduced and fixed with an anterior rim plate via an anterolateral approach (Fig. 1C). Medial column support was achieved with percutaneous, cannulated fully threaded 4.5-mm screws (Figs. 1D-F). Fixation was completed with a precontoured anterolateral plate (Figs. 1G and H).

Results: At 6 months postoperatively, the patient was clinically and radiographically healed without change in alignment or complication (Fig. 1I). We have 3 patients with C2/C3 complete articular pilon fractures, treated with medial column fixation with percutaneous large fragment cannulated screws. At minimum 3-month follow up, all patients healed their injuries without complications or further reoperation.

Conclusion: Medial column support with large fragment fixation in pilon fractures is a viable option to provide mechanical support and effectively manage tenuous soft-tissue envelope. This preliminary technique merits further clinical and biomechanical consideration in the treatment of pilon fractures.

