Distal Third Tibial Shaft Fracture Treated with a Tibial Intramedullary Nail and Percutaneous Posterior Malleolus Fixation

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Background:
The tibia is the most commonly fractured longbone. Tibial shaft fractures exhibit a bimodal distribution, typically with higher energy fractures occurring in young patients in their 20s and 30s (transverse, comminuted, segmental patterns) and lower energy fractures occurring in older patients (spiral, short oblique patterns). Spiral distal third tibial shaft fractures have a high incidence of concomitant ipsilateral posterior malleolus fractures. In this technique, the posterior malleolus fracture is stabilized with percutaneous screws so that the nail can be placed as distal as possible without displacing the fracture.

Purpose:
This video overview and case presentation demonstrates percutaneous posterior malleolus fixation and tibial intramedullary nailing of a distal third tibial shaft fracture with posterior malleolus extension.

Methods:
The background and classification of closed tibial shaft fractures are reviewed. A case of a 39-year-old female with a closed distal third tibial shaft fracture with posterior malleolus extension is presented. The exam and imaging findings, treatment options and potential complications are discussed. The details of the surgical technique, follow up imaging, and a brief review of the literature are included.

Results:
Intraoperative fluoroscopy and post operative imaging demonstrates near anatomic alignment of the tibial shaft fracture. The patient was made weight bearing as tolerated at 6 weeks postoperatively and is progressing well clinically.

Conclusion:
Percutaneous posterior malleolus fixation and tibial intramedullary nailing is an effective surgical option for distal third tibial shaft fractures with posterior malleolus extension. This technique minimizes soft tissue trauma and periosteal stripping at the fracture site while restoring length, alignment and rotation.