New Techniques and Emerging Evidence #NT10

Foot, Ankle, Pilon

Primary Ankle Fusion Using an Antegrade Nail Into the Talus for Acute Treatment of OTA Type C3 Distal Tibial Plafond Fractures

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Purpose: Type C3 distal tibial plafond fractures consistently show poor outcomes with high complication rates and significant risk of posttraumatic arthritis. We describe a minimally invasive technique of performing a primary ankle fusion using an anterograde tibial nail that has not been previously described for this injury and our early results compared to traditional methods of fixation.

Methods: During the acute admission, the patient undergoes an arthroscopic preparation of the ankle joint and insertion of an anterograde nail into the talus. This technique is described in detail and presented alongside a retrospective 5-year review of all C3 distal tibial plafond fractures.

Results: 26 patients (8 open fractures) had been fixed traditionally using open reduction and internal fixation (ORIF, 24 patients) and circular frames (2 patients) with an average follow-up of 20 months. Those internally fixed had protected weightbearing for 3 months. Complications included deep infection (12%), nonunion (8%), malunion (4%), severe posttraumatic osteoarthritis (27%), and the secondary conversion rate to ankle replacement/fusion was 12% requiring an average of 3 reoperations. Six patients underwent primary fusion (3 open fractures) with an average follow-up of 18 months. Patients were allowed to immediately weight-bear.

There were no reported complications and the primary fusion group demonstrated shorter hospital stays, faster return to work, and higher mean self-reported foot and ankle score (SEFAS) compared to those treated with ORIF.

Conclusion: C3 distal tibial plafond fractures are difficult to manage and there has not been a satisfactory method of treating them that allows early return to work, low risk of complications, and reduces the risk of posttraumatic tibiotalar arthritis. We present a method that uses traditional arthroscopic techniques to prepare the tibiotalar joint together with minimally invasive anterograde tibiotalar nailing. Surgery can be performed during the acute admission once the swelling has subsided and allows immediate full weightbearing.