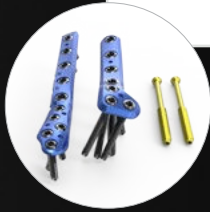


Trimalleolar Ankle Fracture Treatment Using Plate and Screw Fixation

Case Study

Jeffrey Seybold, MD

A 57-year-old man sustained a trimalleolar ankle fracture-dislocation that was treated with the Acumed Ankle Plating System 3.



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Pre-op A/P X-ray

12 weeks postoperative

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Patient History

The patient is a 57-year-old man with a medical history of tobacco abuse who presented to clinic with a right trimalleolar ankle fracture-dislocation. The patient was initially seen at a local urgent care clinic where the ankle was placed in a Jones splint and a CT scan was obtained. Upon presentation to clinic, significant fracture blisters were noted diffusely around the ankle, and the ankle was subluxated posteriorly. The patient was brought to the operating room for application of an external fixator to improve stability of the ankle mortise. Twelve days later, after adequate resolution of soft tissue swelling and healing of the fracture blisters, the patient was brought back to the operating room for definitive fracture fixation.

Treatment

The patient was positioned prone on the operating table. A standard posterolateral approach was used and the FHL muscle belly and tendon were reflected medially to expose the posterior distal tibia. The peroneal muscle bellies and tendons were mobilized laterally to allow adequate exposure of the posterior fibula. Anatomic reduction of the distal fibula fracture was achieved first, and the fracture was temporarily stabilized with a K-wire. The wire is used initially to maintain adequate fibular length and fracture reduction while allowing the surgeon to visualize the posterior malleolus on a lateral fluoroscopic image. Plating the fibula first will block the view of the posterior malleolus and is not recommended.

The posterolateral fracture fragment was carefully elevated to allow for reduction of the marginal impaction at the articular surface. The small impacted fragments were then stabilized by reducing the large posterolateral malleolar fragment. The Acumed 4-Hole Posterolateral Distal Tibia Plate was used to stabilize the posterolateral fragment with locking screws securing the fragile fracture fragment. After confirming anatomic reduction of the posterior malleolus, the fibula was formally fixed with an Acumed 6-Hole Posterolateral Fibula Plate. Even with varied contour of the fibula proximally, limiting fixation with more than two screws, the plate was not prominent, did not cause further soft tissue irritation, and provided adequate stability to allow for fracture healing.

After layered closure of the posterior wound, the knee was flexed and a longitudinal incision was made over the medial malleolus fracture. Direct anatomic reduction of the fracture was achieved with pointed reduction forceps and the fracture was secured with two Acumed 4.0 mm partially threaded Cannulated Screws. Final fluoroscopic images demonstrated anatomic reduction of the fractures and a stable ankle mortise without residual talar subluxation or syndesmotic instability. Layered closure of the medial malleolus incision was performed and the patient was placed in a short leg splint.

Postoperative Care

The patient was kept non-weight-bearing for a total of six weeks postoperatively and weight bearing was then advanced in a cast boot over the subsequent weeks. The patient was able to progress activity in a regular shoe by 10 weeks postoperatively and returned to full work duties, which included driving, by four months. Final evaluation demonstrated healed fractures without progressive post-traumatic degenerative changes. The patient did not report any hardware irritation. The patient demonstrated range of motion from 20 dorsiflexion to 40 plantarflexion and was pain-free throughout range of motion.

Discussion

Ankle fractures present with many variations, and the surgical plan may change in the operating room based upon the fracture pattern, bone fragility, or soft tissue envelope. The Acumed Ankle Plating System 3 provides the surgeon with multiple tools to address the most complex ankle fracture patterns, including standard cannulated screws and one-third tubular plates, as well as posterior malleolus locking plates and medial malleolar hook plates. Fixation of the posterior malleolus has gained significant traction in recent years, even for smaller fractures, due to concerns for stability of the syndesmosis and limiting posterior subluxation of the talus leading to deformity and post-traumatic arthritis. A posterolateral approach allows for excellent visualization of the posterior malleolus and distal fibula and the Acumed Ankle Plating System 3 provides multiple plate and screw options to accommodate fixation of fractures with this approach.



CT scan



Post-Op A/P



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