The Journal of Foot & Ankle Surgery 51 (2012) 326–329

Contents lists available at ScienceDirect

The Journal of Foot & Ankle Surgery

journal homepage: www.jfas.org

Case Reports and Series

Entire Posterior Process Talus Fracture: A Report of Two Cases

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ARTICLE INFO

Level of Clinical Evidence: 4
Keywords:
ankle
injury
open reduction internal fixation
subtalar joint
trauma
tubercle

ABSTRACT

The complex anatomy of the posterior process of the talus includes the medial and lateral tubercles extending from the talar body. Review of the current literature indicates that fracture of the entire posterior process of the talus is a rare injury. Two patients presented to our emergency department after motor vehicle accidents, and both were diagnosed with entire posterior process talus fractures. After evaluation of each patient, treatment of each was undertaken by means of open reduction and internal fixation via the posteromedial approach to fracture. Headless screws were used to fixate the reduced posterior tubercle in each case. Based on our experience with the patients described in this report, open reduction and internal fixation appear to be suitable methods of treatment for complete posterior process fractures of the talus.

The complex anatomy of the posterior process talus is comprised of the medial and lateral tubercles (1). Posterior talar fractures usually involve an isolated fracture of either the medial or lateral tubercle and rarely entail simultaneous fracture of the medial and lateral tubercles (entire posterior process fracture) (2,3). It is not unheard of that posterior process talus fractures can be overlooked, unless the evaluating surgeon maintains a high index of suspicion for the injury. Isolated medial or lateral tubercle fractures can be more difficult to identify than entire posterior process fractures, because the latter creates a larger fracture fragment that may be more easily seen on standard radiographs. In any case, computerized tomography (CT) scans are helpful in confirming the diagnosis and guiding treatment (4,5). Because the posterior process of the talus involves tibiotalar (posterior ankle) and talocalcaneal (posterior facet of the subtalar) joints, even minimal displacement of the fracture fragment can result in substantial joint misalignment and posttraumatic arthritis, even after reasonable treatment has been administered (6), and for this reason accurate reduction and stable fixation are crucial and recommended (5,7). The purpose of this report is to describe a case of total posterior process (medial and lateral tubercles) talus fracture, including operative reduction and fixation of the fracture.

Case Reports

Case 1

A 31-year-old man sustained what he described (in other terms) as an inversion and plantarflexion injury of his left ankle during a motorcycle accident, and presented to our emergency department approximately 4 hours after the injury with complaints of left foot pain and swelling and an inability to bear weight on the injured foot. On clinical examination, the author (M.K.S.) identified focal pain upon palpation of the medial malleolus, along with stiffness of the ankle and subtalar joints. There was no evidence of neurovascular compromise involving the left lower extremity, and the gross orientation of the foot and ankle was normal in appearance, except for the edema. Initial radiographic inspection revealed a fragment of bone at the medial aspect of the body of the talus on the anteroposterior (AP) view, and posterior to the body of the talus on the lateral view, and CT revealed a fracture of the entire posterior process of the talus (Fig. 1).

After discussion of treatment options, the patient's left lower extremity was stabilized in a below-the-knee splint, and the decision was made to subsequently go to the operating room for open

Financial Disclosure: None reported.
Conflict of Interest: None reported.
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doi:10.1053/j.jfas.2012.02.007

Fig. 1. Anteroposterior and lateral views of preoperative standard radiographs (*A*) and CT scans (*B*) of the entire posterior talar process fracture in Case 1.

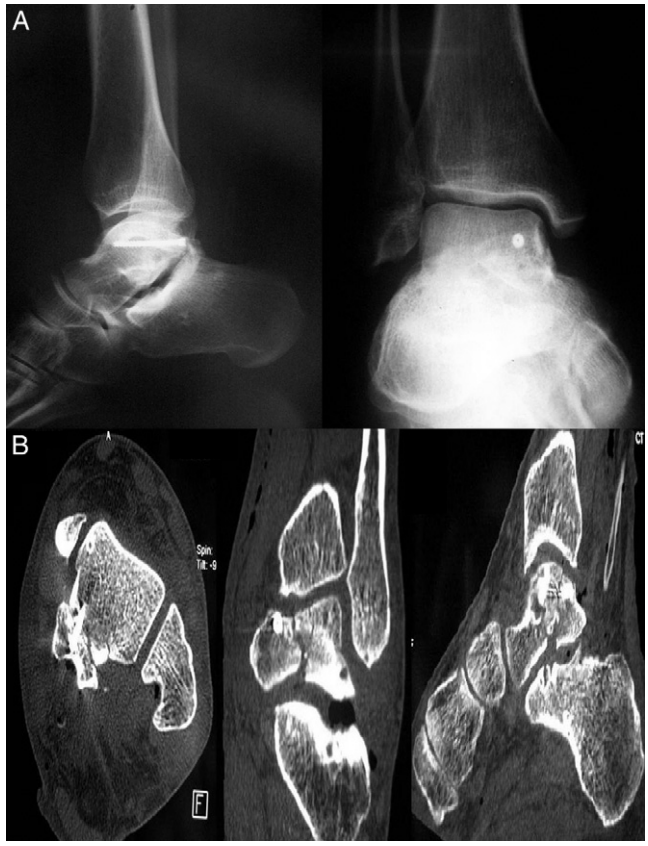

Fig. 3. Early postoperative standard lateral and anteroposterior radiographs (*A*) and CT scans (*B*) of the reduction and fixation in Case 1.

reduction and internal fixation (ORIF) of the complete posterior process fracture of the talus.

In the operating room, the patient was regionally anesthetized with 0.5% plain bupivacaine and intravenous sedation and placed in a prone position, and a pneumatic tourniquet was used about the left thigh. Before exsanguination of the left lower extremity, 1 gram of cefazolin was administered intravenously. The posterior aspect of the talus was then approached with a 5-cm longitudinal incision placed medial to the medial margin of the Achilles tendon, which was retracted laterally. The flexor hallucis longus muscle and the posterior tibial neurovascular bundle were then identified and protected by means of careful retraction to the medial aspect of the surgical wound (Fig. 2). The posterior ankle and subtalar joint capsules, contiguous at this location, were incised and reflected, thereby exposing the fracture of the posterior process of the talus, including the medial and lateral tubercles. The fracture was reduced under direct visualization by means of manipulation and dorsiflexion of the ankle and then temporarily stabilized with 2 guide pins (Fig. 2), and the reduction was confirmed with image-intensification fluoroscopy. Definitive fixation was then achieved with a single 3.0-mm headless compression screw (Synthes® 3.0 mm Headless Compression Screw; Synthes, Inc., West Chester, PA) directed from posterior to anterior through the fracture fragment into the body of the talus (Fig. 3). The wound was then closed in anatomic layers, and the limb stabilized in a dry, sterile bandage and

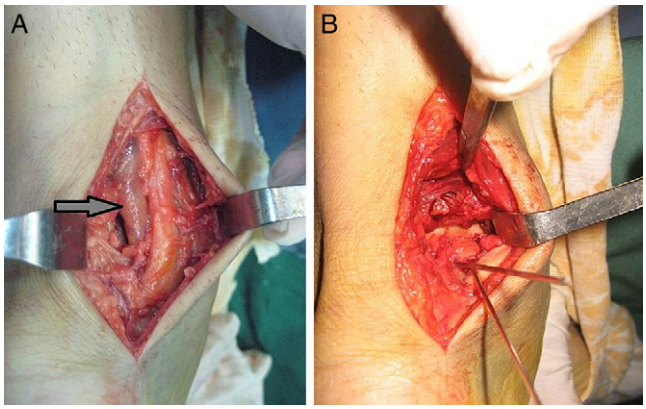

Fig. 2. Intraoperative views of the posteromedial surgical approach showing tendon of flexor hallucis longus (*arrow*) (*A*), and provisional fixation of the fracture with guide pins for the cannulated headless compression screws in Case 1 (*B*).

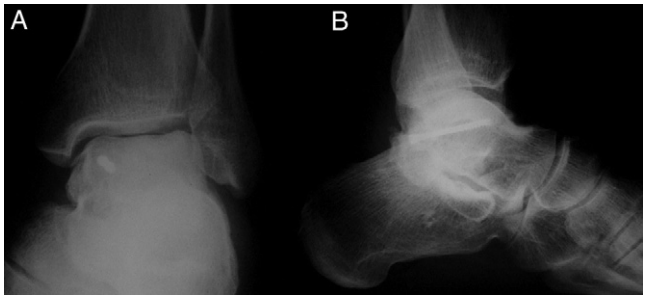

Fig. 4. Postoperative 9-month follow-up anteroposterior (*A*) and lateral (*B*) radiographs of the repaired entire posterior process talus fracture without evidence of ankle or subtalar arthritis.