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Case Report

Medial peritalar fracture dislocation of the talar body

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ABSTRACT

Peritalar fracture dislocations typically involve the talar neck and are classified according to Hawkins. To our knowledge, peritalar fracture dislocation involving the talar body has not been formally reported. In this article, we describe a case of peritalar fracture dislocation of the talar body.

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Case report

An otherwise healthy 45-year-old male was transferred from an outside facility to our emergency department with a complaint of 9/10 sharp non-radiating left ankle pain after an inversion injury while stepping backward off of the third rung of a ladder onto an unstable foam pad causing his left ankle to invert violently. He noted immediate pain and deformity after the incident with swelling of the left ankle following shortly thereafter. The patient denied any other injuries. He was initially seen at an outside hospital where two attempts at closed reduction under conscious sedation were unsuccessful. Upon arrival in our ED, the patient appeared to be in considerable pain. His head and neck were atraumatic. His left ankle was swollen with intact skin and was held in an adducted and inverted position in neutral dorsiflexion. His left great toe was held in a flexed position at the IP joint (Fig. 1A). Compartments in the leg and foot were soft and compressible. He had no range of motion about the ankle secondary to pain, but the extensor hallucis longus and flexor hallucis longus were intact. The patient's sensation to light touch in the saphenous and sural nerve distributions was intact, but sensation in the lateral and medial plantar nerve distributions was diminished. Posterior tibial pulse was 2+.

Review of the plain films showed dislocations of the ankle, talocalcaneal, and talonavicular joints with a comminuted talar body fracture in the coronal plain of the lateral radiograph (Fig. 1B). After a third and final failed attempt at closed reduction, plans were made for an urgent open reduction and percutaneous pinning (ORPP) of the peritalar dislocation.

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Fig. 1. (A) Prereduction images from ED showing inversion deformity of the ankle with supination of the forefoot and fixed flexion of the IP joint of the great toe. (B) Prereduction plain films AP/lateral showing the posterior portion of the talus appears to remain reduced in the ankle mortise while the anterior portion appears to be dislocated in an externally rotated fashion with the foot in an inverted and supinated position.

ORPP via the sinus tarsi approach included splitting the EDB longitudinally at which point we could see the extensor retinaculum as the offending structure blocking our reduction of the talonavicular joint. By releasing the extensor retinaculum from the talar head, neck, and body of the talus, we were able to quite easily reduce the ankle, subtalar, and talonavicular joints with the single maneuver described for the closed reduction attempt. Pre- and postreduction intraoperative films are shown (Fig. 2A and B). We then decided to provisionally stabilize the subtalar and the talonavicular joints by placing two pins through the talar neck into the calcaneus in a dorsal to plantar fashion followed by two pins across the talonavicular joint (Fig. 2C). The patient was placed in a short leg splint and was made non-weight bearing while his soft tissue swelling reduced to a point where definitive ORIF of the talus could be performed.



Fig. 2. (A) Prereduction intraoperative C-arm images showing the navicular is dislocated medially with the talar head remaining lateral and rotated within the ankle mortise. (B) Postreduction intraoperative C-arm images showing the ankle, subtalar, talonavicular, and calcaneocuboid joints reduced. (C) Postreduction intraoperative C-arm images showing a pinned reduction of the subtalar and talonavicular joints.

A CT scan was obtained at this point for further evaluation of the talus fracture, which showed a lack of reduction of a posterior talar dome fracture. The fracture is in the oblique coronal plane from posterolateral to anteromedial orientation. The posterior talar dome fragment is rotated by approximately fifty degrees in the sagittal plane with the anterior dome segment depressed by approximately one centimeter and posteriorly subluxed by one centimeter. There is loss of articular apposition as a result along the posterior ankle and posterior part of the posterior subtalar joint by 10–15 mm (Fig. 3).

After 2 weeks of immobilization, the soft tissue swelling had reduced enough to allow for definitive fixation of the talus fracture. The subtalar pins were removed leaving the two talonavicular pins in place. A posteromedial approach to the ankle was taken in conjunction with a medial malleolar osteotomy. In this way, the talus was reduced under direct visualization and fixed with cannulated screws.

Over the next 9 months, the patient graduated in weight bearing status as plain films demonstrated healing of the fracture site. At the ninth month follow-up visit, the patient is fully weight bearing and is back to all preinjury activities. He has no complaints of pain and reports full satisfaction with the treatment course. On physical exam, patient has full range of motion in the ankle, subtalar, and transverse tarsal joints equal to the contralateral side. He reports no numbness or paresthesias in the sole of his foot as reported at the time of injury. Plain films at his 9-month postinjury visit show a well-healed talar body fracture with maintained hardware position, well-reduced ankle, talonavicular, and subtalar joints, and no evidence of AVN of the talus (Fig. 4).

Discussion

Peritalar dislocations have been grouped with subtalar dislocations in the past; however, because the injury involves both the talonavicular and subtalar joints, the term peritalar dislocation is preferable as being more anatomically correct [9]. Just as subtalar dislocations are classified according to the displacement of the calcaneus in relation to the talus, peritalar dislocations are classified according to displacement of the forefoot in relation to the talus. Dislocations about the talus are treated similarly with prompt reduction, closed if possible, and immobilization. Here a previously unreported pattern of medial peritalar fracture dislocation of the talar body in a middle-aged man with no medical comorbidities is treated with staged reduction and fixation.



Fig. 3. Post-ORPP CT scan showing the talar body fracture through the talar dome in an oblique coronal plane with the posterior portion of the talus rotated and subluxed.



Fig. 4. Lateral/mortise plain films 8 months s/p ORIF showing maintenance of reduction and no signs of AVN of the talus.

Peritalar dislocations involve the tibiotalar, talocalcaneal, and talocalcaneonavicular joints. In that way, they can be viewed as a more thorough dislocation of the talus than subtalar dislocations. Medial subtalar joint dislocations account for approximately 85% of subtalar dislocations and are usually the result of an inversional force, driving the talar head laterally and displacing the hindfoot medially [2,7,11,13]. Obstruction to closed reduction occurs in anywhere from 10% to 30% of subtalar dislocations, classically due to entrapment of the extensor digitorum brevis, extensor retinaculum or obstructing fracture fragments [1,6,8]. In that case, open reduction is required.

Talus fractures account for less than 1% of all fractures, with 50% being of the talar neck. Fractures in which the inferior fracture line propagates in front of the lateral process are considered talar neck fractures. Fractures in which the inferior fracture line propagates behind the lateral process involve the posterior facet of the subtalar joint and are therefore considered talar body fractures [3]. Therefore, talar neck fractures are by definition extra-articular, whereas talar body fractures violate the ankle joint, subtalar joint, or both.

Fractures of the talar neck account for approximately 50% of all talus fractures and are classified according to Hawkins. Hawkins' type IV fractures are described as fracture of the talar neck associated with dislocation of the body from the ankle and subtalar joints with additional dislocation or subluxation of the head of the talus from the talonavicular joint. Peritalar dislocations are classified based on the relation of the forefoot to the talar head with medial dislocation being the most common in closed injuries. Here a case of medial peritalar fracture dislocation of the talar body is presented. This case presents similarly to a Hawkins' IV only the fracture is through the posterior dome of the body instead of through the neck of the talus.

Hawkins' classification of talar neck fractures gives insight into future risk of AVN where type IV fractures have a reported 70% to 100% risk. Risk of AVN in talar body fractures has similarly been reported at 88% [12]. Lindvall et al. reported similar complications and outcomes between talar body and talar neck fractures [10].

This particular case is unique in both the mechanism and the injury pattern itself. Typically talar body fractures are high energy resulting from motor vehicle accidents or falls from height [9]. In this case, the patient's injury occurred after stepping backward off the lower rung of a ladder – an approximate height of only a few feet.

Although overall dislocations about the talus are rare, the majority of them are subtalar in nature involving the talocalcaneal and talonavicular joints. It is extremely rare to see total dislocations of the talus but when present are usually associated with a fracture in the hindfoot [4,5,13].

A review of the literature reveals this case to be a previously unreported pattern of injury where a medial peritalar fracture dislocation of the talar body was treated with a staged reduction and fixation.

Conflict of interest

There are no conflicts of interest from any of the authors.

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