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Open Ankle Dislocation Without Fractures With Tibialis Posterior Tendon Interposition Through the Interosseous Space

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ABSTRACT

Open ankle dislocations without fracture are rare injuries. Dislocation or interposition of adjacent tendons are a rare associated feature of ankle fracture-dislocation. We report an extremely unusual case of open ankle dislocation without fracture with concurrent tibialis posterior tendon interposition through the interosseous space that was detected incidentally on computed tomography. We highlight the clinical, radiologic, and intraoperative features to avoid missing similar diagnoses.

Ankle dislocations are usually seen with an accompanying fracture of the tibia or fibula, or both, as described in many well-known classifications. Ankle dislocation without an associated fracture, however, is less common, and only a few series have been reported (1). Understanding the potential pitfalls in the management of these serious injuries is important for all involved in the care pathway to avoid complications and unnecessary returns to the operating theater.

We describe an unusual case of an open ankle dislocation without fracture in a healthy young female and report the incidental finding of tibialis posterior (TP) tendon interposition in the interosseous space. To the best of our knowledge, ours is the first case of TP tendon interposition in an open ankle dislocation without an associated fracture. The management of this case highlights important clinical, radiologic, and intraoperative features that could help avoid missing similar diagnoses.

Case Report

A 17-year-old female, with no pertinent medical history, presented to the emergency department (ED) after having sustained an isolated injury to her right ankle. She had been involved in a rugby tackle that resulted in twisting of her right ankle and the opponent then falling onto her ankle from behind, forcing it into extreme plantarflexion. She was immediately removed from the field of play with a painful deformed ankle.

On examination in the ED, she had grossly deformed right ankle with a 12-cm transverse wound medially through which the medial malleolus was exposed (Fig. 1). She had intact sensation in the distribution of the superficial peroneal, deep peroneal, and tibial nerves, and both dorsalis pedis and tibialis posterior pulses were detectable using a Doppler probe. Antibiotic coverage (amoxicillin and clavulanic acid 1.2 g intravenously) and an intramuscular tetanus booster were administered, and the wound was irrigated with 2 L of normal saline. A series of portable plain radiographs were obtained before reduction, given their immediate availability, to assess the extent of injury (Fig. 2).

Reduction was first attempted with the patient under conscious sedation in the ED. Reduction was difficult, and the tibiotalar joint had to be swept clear with a finger through the open wound to ensure no structures were within the joint space and mechanically blocking the reduction. Syndesmosis disruption and the resultant splaying contributed to a lack of a firm endpoint to confirm reduction. Once the joint space had been cleared, reduction was facilitated, and a plaster-of-Paris splint was applied. A computed tomography (CT) scan (Fig. 3) was then taken, which showed persistent subluxation of the tibiotalar joint with a widened syndesmosis and talar shift but without overt fracture.

The patient underwent surgery 4 hours after the injury with wound washout and stabilization of the syndesmosis with 2 fully

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Fig. 1. Right open ankle dislocation with exposed medial malleolus.

threaded 3.5-mm cancellous screws, which were applied percutaneously. Examination with the patient under anesthesia at that point confirmed a stable ankle joint (Fig. 4). The syndesmosis had not been reduced using an open approach because of concerns of a second incision over the lateral malleolus, given the swelling around the ankle.

A subsequent review of the case, including a formal report of the initial CT scan by a senior radiologist, revealed an abnormal path of the tibialis posterior tendon, which passed between the distal tibia and fibular 5 cm above the tibial plafond and anteromedially to the distal tibia and down to its normal insertion (Fig. 5). A second CT scan was performed on both ankles to assess the syndesmosis reduction and fixation and to compare the right ankle joint to the left. The second CT scan revealed an imperfect syndesmosis reduction and slightly wider medial clear space in the right ankle compared with the left, despite satisfactory positioning of the screws (Fig. 6).

The patient returned to the operating theater for a second surgery, at which time, exploration of the medial wound showed an intact flexor hallucis longus tendon; however, the TP tendon was missing from the tendon sheath. The TP tendon was found anterior to the medial gutter. A second incision was made over the lateral malleolus to further explore the ankle, which revealed the anterior compartment stripped subperiosteally from the tibia and the TP tendon appearing between the tibia and fibula, approximately 5 cm above the distal tibiofibular joint, and draped over the front of the distal tibia. Once the original 2 syndesmosis screws had been removed and the ankle dislocated, the TP tendon could be relocated to its original position and remained stable. The syndesmosis was then secured with three 4.0-mm cortical screws. The ankle joint was still shown to be unstable by an anterior draw test; therefore, lateral talofibular ligament avulsions and medial ligament avulsions were repaired with

Fig. 2. Initial anteroposterior and lateral plain radiographs of right ankle showing dislocated talus anterolaterally to the tibia and fibula and a small foreign body anterior to the lateral malleolus. No obvious fractures can be seen.