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Case report

Hawkins' type-II talar fracture with subtalar dislocation: A very unusual combination

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ABSTRACT

We report the unusual case of a 16-year-old young man who sustained a rare association of a Hawkins' type-II talar neck fracture with a complete medial subtalar dislocation (Hawkins type-IIB) that occurred as an isolated injury after indirect trauma during a soccer game. Following closed reduction of the subtalar dislocation, standard radiographs and computed tomography (CT) demonstrated a comminuted fracture of the talus involving the base of the talar neck. Open reduction was performed and the fracture was stabilized by ORIF. At 1-year follow-up, functional and radiographic outcomes were graded as excellent, with no radiographic evidence of talar osteonecrosis.

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1. Introduction

Pure medial subtalar dislocation occurring from isolated indirect trauma is a rare injury (1–2% of all joint dislocations) [1]. When associated with a Hawkins type-II talar neck fracture, this event becomes uncommon. We report the case of a 16-year-old young man who sustained an indirect trauma while playing soccer and initially presented with a pure medial subtalar joint dislocation and associated signs of posterior tibial neurovascular compromise. Only after the subtalar dislocation was reduced did fluoroscopic examination reveal an associated Hawkins type-IIB talar neck fracture [2–4]. The purpose of this report is to describe the rare presentation of these two injuries where the talar neck fracture could be masked by the subtalar dislocation, and describe the diagnostic evaluation with computed tomography (CT) and early talus reduction and osteosynthesis.

2. Case report

A 16-year-old teenager reported an inversion/adduction mechanism of injury to his right ankle with a high forced dorsiflexion described by Butel et al. [5]. This was considered an indirect mechanism of injury since there was no traumatic contact. The patient was seen in the emergency department with a severely deformed

right ankle associated with moderate pain and total functional disability. Moreover, clinical examination revealed an absent posterior tibial pulse with ischemia of the right foot (white blanching of the toes and purplish in step), and paresthesia in the terminal branches of the posterior tibial and lateral cutaneous nerves to the tip of the lateral malleolus (Fig. 1). Both anteroposterior and oblique poor quality radiographs of the foot showed medial displacement of the midfoot with no easily evidence of an associated fracture, and the initial medical diagnosis was a complete subtalar joint dislocation (Fig. 2A and B). The patient was immediately taken to the operating room and placed in the prone position for closed reduction under general anesthesia. The subtalar dislocation was easily and successfully reduced by traction and manual pressure on the talar head with the forefoot in pronation. Immediately following the reduction, the toes recovered normal coloration and the posterior tibial artery was palpable. The adequacy of reduction and joint stability were then evaluated under fluoroscopy. The foot was immobilized in a short-leg splint. Post-reduction X-rays revealed a displaced talar neck fracture with and intraarticular step-off (Fig. 3A and B). A CT scan evaluation was performed confirming a Hawkins type-IIB talar fracture (Fig. 4A and B) [2–4]. Within 12 hours following the injury, osteosynthesis was performed through combined antero-medial and anterolateral approaches in order to effectively control neck rotation during the whole procedure and achieve anatomical reduction [6–8]. While maintaining the blood supply to the talus by periosteal preservation, anatomic reduction of the displaced fracture was secured by means of two 1.6-mm Kirschner wires. A four-hole 2.3-mm contoured plate was applied along the

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Fig. 1. Initial clinical aspect of the foot, before reduction, showing signs of neurovascular compromise.



Fig. 3. Anteroposterior (A) and oblique (B) radiographs of the right ankle showing satisfactory reduction of the medial subtalar dislocation and the displaced talar neck fracture (Hawkins type-II B).



Fig. 2. Anteroposterior (A) and oblique (B) radiographs of the ankle illustrate medial subtalar dislocation of the right hindfoot.

lateral talar neck providing stable fixation. It was noted that on the medial aspect of the talar neck, the fracture was obliquely oriented and extended through the medial aspect of the talar body (Fig. 4B). There was no indication for a second 2.3-mm plate as it could have interfered with the articular surface of the medial malleolus. Thus, a 3.5-mm cortical lag screw was inserted obliquely, perpendicular to the initial fracture line. The screw head was countersunk to avoid irritation of the joint (Fig. 5A and B). Both incisions were closed in routine fashion and the limb immobilized in a below-knee cast maintaining ankle flexion at 90°, with a dorsal window for dressing changes. The patient was instructed to remain non-weight-bearing for 6 weeks at which time the cast was removed and physical therapy initiated, consisting of passive and active assisted and resisted ankle range of motion exercises. Despite a low specificity, the Hawkins sign was absent on X-rays at 6 weeks. Progressive weight-bearing was begun and the patient was permitted to ambulate without restriction in regular shoes at 10 weeks post-operative. At 1-year follow-up, there was a full range of motion of foot and ankle (AOFAS score 90/100 points) [9] and CT scan showed satisfactory fracture healing with no evidence of degenerative changes in either the ankle or subtalar joints. A magnetic resonance imaging (MRI) study revealed no evidence of avascular necrosis (AVN) (type A in the classification of Thordarson et al. [10]) (Fig. 6).



Fig. 4. Sagittal (A) and coronal (B) CT images after reduction of the subtalar dislocation reveal a frontal and oblique talar neck fracture.

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