



Consequences of a missed ankle dislocation in an adolescent



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ABSTRACT

Ankle dislocation without associated malleolar fracture(s) remains a rare presentation, especially in adolescence. Identified and treated promptly, these injuries can result in good to excellent outcome. We present an anterior ankle dislocation in a 14 year old, missed for approximately 12 months, necessitating multiple surgical interventions to provide a pain-free and stable joint. A review of the current literature is also provided.

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1. Introduction

Ankle dislocations without associated malleolar fractures (pure dislocations) remain a rare injury, due to the relative strength of the surrounding ligaments with respect to the bony structures.

First reported in the literature in 1913, subsequent entries into the literature have been confined to sporadic case reports [1–18].

Typically, pure ankle dislocations occur following high energy mechanisms, such as road traffic collisions [1,3,5–7,16] or fast-paced sports [8–10] and are often associated with overlying soft tissue injuries [1,4,8,10,12,13].

A combination of forced plantarflexion with inversion or eversion has been shown to cause these injuries [3,6,8,11,12].

Fahey and Murphy [2] subdivided pure ankle injuries according to the direction of the talar dislocation; with posterior dislocations most common, and pure anterior dislocations, least common.

Factors that increase the risk of pure dislocation include: malleolar hypoplasia, a history of ligamentous laxity, recurrent ankle sprains and neuromuscular conditions [1,11,14].

Prompt diagnosis, reduction and joint stabilisation has been shown to give good to excellent results [1–10,12–14]. Ipsilateral ankle/foot injuries may confuse the clinical picture and lead to delayed diagnosis of this injury.

We present a case of a missed anterior ankle dislocation in a 14 year old female, which remained untreated for approximately 12 months, leading to multiple surgical interventions. We also present

a review of the recent English language literature for pure tibio-talar dislocations.

2. Case report

A 14 year old girl presented to the emergency department in August 2008 after her right foot was allegedly run over by a car. As the patient was under the influence of alcohol, an exact history or mechanism of injury could not be accurately sought at the time.

The patient complained of right foot and ankle pain and a degloving injury to the dorsum of the right lateral foot was noted. Radiographs taken of the foot, revealed a minimally displaced fracture of the ipsilateral fifth metatarsal (see Fig. 1).

The patient was referred to the plastic surgical team for grafting of her degloving injury, and was subsequently discharged following good progress therein, mobilising with the assistance of crutches.

In December 2008, the patient attended her GP due to ongoing pain and inability to weight bear. Radiographs were requested, showing an anterior ankle dislocation (see Fig. 2).

Orthopaedic referral was sought, but the patient failed to attend several booked appointments, until August 2009.

Examination revealed a fixed equinus deformity with pain on attempted dorsiflexion.

A Taylor spatial frame was applied in October 2009 to distract the ankle joint, and achieve indirect reduction and stabilisation (Fig. 3). The frame was removed in January 2010, after 3 months in situ. Following removal, the ankle joint was noted to be anteriorly subluxed. The joint was stabilised with a 3.2 mm K-wire, passed in a retrograde fashion from heel to tibia, for a 1 month period (Fig. 4). The patient was placed into an air cast boot and allowed to mobilise.

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Fig. 1. Lateral radiograph taken at initial presentation to the emergency department.

At follow up in March 2010, the patient was able to fully weight bear without pain in the air cast boot. Removal of the boot led to the patient complaining of an 'unstable' and painful ankle.

Repeat radiographs revealed an anteriorly subluxed tibiotalar joint.

In June 2010, the patient underwent an open ankle fusion, performed via an anterior approach. Joint surfaces were resected, supplemented with autologous iliac bone graft and fixed with 6.5 mm and 4 mm cannulated screws in posterior to anterior direction (Fig. 5). The patient was advised to remain non-weight-bearing for initial 6 weeks, followed by full weight-bearing in an air cast boot.

Radiographic ankle fusion was confirmed in September 2010, at which point the use of the air cast boot was discontinued.

Further follow up in November 2010 and then in March 2011 showed that the patient was mobilising fully weight-bearing with no pain. There was complete healing of all soft tissues, a fully sensate foot with normal vascularity and a dorsolateral scar to the foot overlying the lateral metatarsals. The time from index-injury to final follow up was 31 months.

3. Discussion

Tibiotalar dislocations without associated fractures remain a rare entity, with the majority of reported cases involving adults and often as a result of high energy trauma [1,2,4–6,13]; or sports involving frequent jumping and landing [9–11,17].

High energy mechanisms are often accompanied by significant soft tissue injuries, and as such these joint dislocations can present as open injuries [1,5,9,11,15,16].

Recognised risk factors for pure ankle dislocations are malleolar hypoplasia, ligamentous laxity, a previous history of recurrent ipsilateral ankle sprains and any neuromuscular condition affecting muscle strength and co-ordinated action [1,14,18].

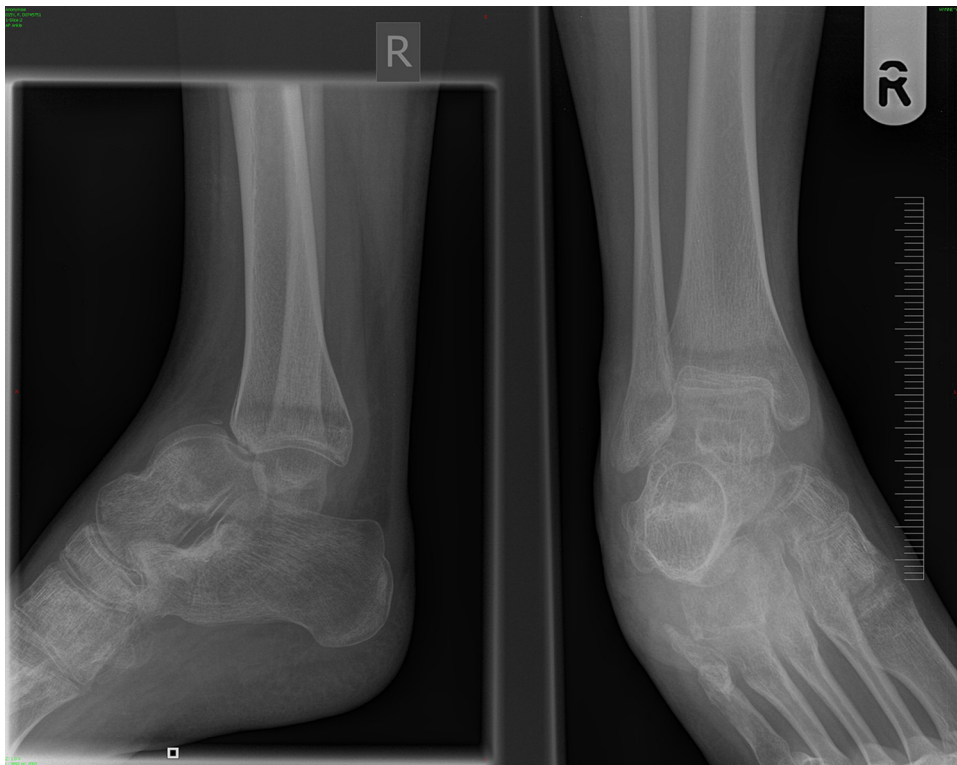


Fig. 2. AP and lateral radiographs, following referral from the general practitioner.

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