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Arthroscopic assessment of the syndesmosis following ankle fracture

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Summary A Maisonneuve ankle fracture without convincing evidence of syndesmotic injury on plain radiographs is described. Stress views and computerised tomography (CT) were also negative. A high index of suspicion led to ankle arthroscopy, which revealed a diastasis, and also an osteochondral fragment. This was treated with two percutaneous diastasis screws and removal of the osteochondral fragment. This case suggests that ankle arthroscopy should be considered as part of the management of syndesmotic injury where conventional imaging techniques fail to show syndesmotic disruption.

Introduction

The syndesmosis of the ankle stabilises the distal tibia and fibula.[3] This ligament complex is made up of the interosseous membrane and four ligaments, namely the anteroinferior tibiofibular ligament (AITFL), posteroinferior tibiofibular ligament (PITFL), inferior transverse ligament and interosseous ligament. Syndesmotic injuries associated with ankle fractures usually occur as a result of external rotation.[1]

Ankle fractures require anatomical reduction for optimal outcome.[16] Soft tissue injury and the presence of loose bodies in the joint often result in a poor outcome, even in the presence of accurate reduction.[2,16] Displaced syndesmotic injuries can lead to early osteoarthritis and destruction of the ankle. The exact criteria for assessing the syndesmosis are debatable. Computerised tomography (CT) and magnetic resonance imaging (MRI) criteria for syndesmotic disruption are similarly not clear-cut.[9]

Case report

A 29-year-old amateur rugby player, previously fit and well, presented to the fracture clinic following a fall. His right leg had been caught under a quad-bike. He had initially presented to an emergency department with a swollen, painful ankle. Plain radiographs showed a fracture of the posterior mal-

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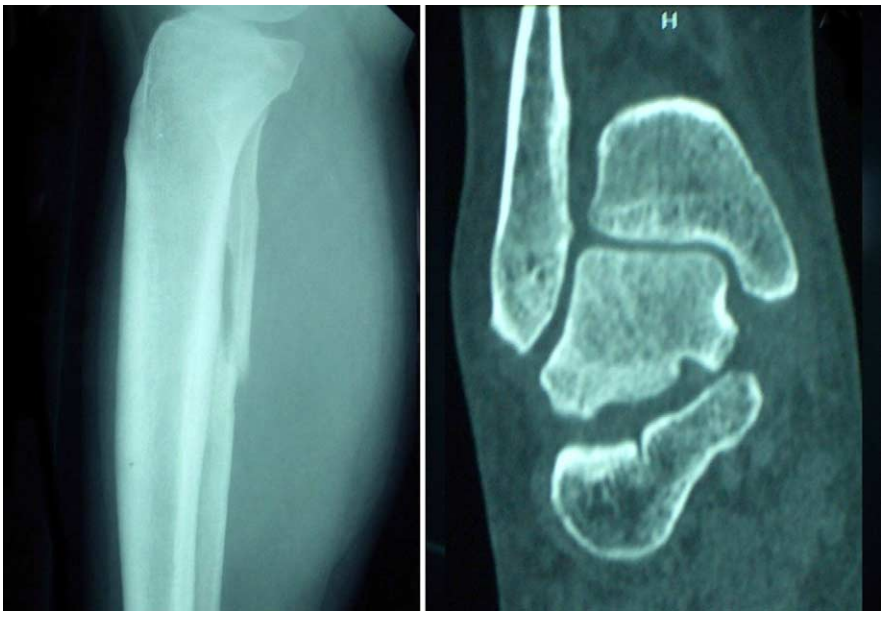

Figure 1 Radiological images showing a plain lateral view of the leg demonstrating a fracture of the proximal fibula (Maisonneuve fracture, left) and a CT coronal view of the distal tibiofibular joint with no widening of the space (right).

leolus with no talar shift. He was treated in a plaster cast and advised to non-weight-bear. In clinic, four weeks later, it was noted that his ankle was still grossly swollen. Long radiographic films were taken at this stage, which revealed a proximal fibula fracture (Maisonneuve injury, Fig. 1) as well as the posterior malleolus fracture, and there was no talar shift. Syndesmotic injury was suspected and a computerised tomography (CT) scan was performed. This showed no diastasis (Fig. 1). Given the nature of the injury, and the persistent swelling, an examination under anaesthesia and ankle arthroscopy was performed. Stress views using the image intensifier did not reveal a diastasis. During arthroscopy, stress on the syndesmosis revealed a diastasis (greater than 2 mm of movement between the distal tibia and fibula, Fig. 2). Additional findings included the presence of fibrous tissue, suggestive of a delayed diagnosis, and a large osteochondral fragment. The fibrous tissue was cleared, the osteochondral fragment removed and the diastasis was fixed with two percutaneous screws.

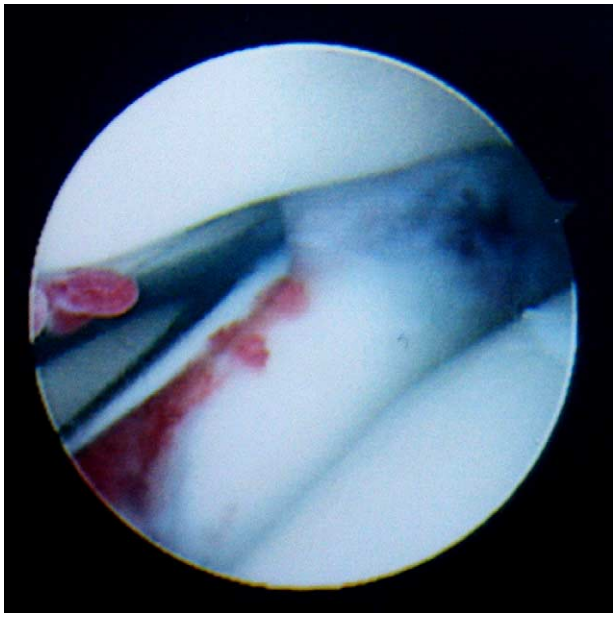

Figure 2 Arthroscopic image displaying the syndesmotic disruption, with widening of the space between the distal tibia and fibula, achieved with a probe.

Discussion

This case highlights two main points. Firstly, it demonstrates a syndesmotic injury that was not evident on plain radiographs or CT, and secondly, it involved a loose body, which was identified during arthroscopy. There is, of course, debate as to whether arthroscopy may lead to excessive diagnosis of syndesmotic injury, and potentially over-treatment.

Syndesmotic disruption occurs commonly with ankle injuries, both in the presence and absence of a fracture.[10] The pattern of injury in a Maisonneuve fracture involves a complete diastasis of the distal tibiofibular syndesmosis,[13] with the force of injury travelling through the interosseous membrane and exiting by fracturing the proximal fibula.