CASE REPORT

Open medial dislocation of the ankle without fracture

A 20-year-old man sustained an open medial dislocation of the ankle without an associated fracture after a low-energy inversion injury. Prompt debridement and reduction with primary wound closure of the skin were performed without suture of the capsule. Immobilisation in a non-weight-bearing cast for 30 days followed by ankle bracing for two weeks and subsequent physiotherapy, produced full functional recovery by three months. At follow-up at one year there was a full range of pain-free movement, although the radiographs and MR scan showed early post-traumatic degenerative change at the medial aspect of the tibiotalar and the calcaneocuboid joints.

Dislocation of the ankle without fracture is uncommon. Previous ankle sprains, medial malleolar hypoplasia, weakness of the peroneal muscles and ligamentous laxity are predisposing factors for dislocation. Although there are few reports in the literature, Toohey and Worsing and Elisé et al have described the largest series, comprising 19 and 16 patients, respectively. Because of the intrinsic stability of the ankle mortise and its ligaments and tendons, dislocation is usually caused by high-energy trauma which causes combined plantar flexion and inversion or eversion of the foot, accompanied by fractures of the malleoli. We describe a case of an open dislocation of the ankle without malleolar fracture which followed a low-energy trauma.

Case report

A 20-year-old man presented after sustaining an inversion injury to his right ankle while running after his cat. On examination there was a large lacerated wound over the dorsolateral aspect of the right ankle approximately 10 cm in length (Fig. 1). The foot was displaced medially. The distal articular surfaces of the fibula and the tibia were exposed. The posterior tibial pulse was absent and there were paraesthesiae involving the dorsal aspect of the foot. Anteroposterior (AP) radiographs indicated a medial dislocation of the talus without concomitant fracture or disruption of the ankle mortise (Fig. 2). There was medial malleolar hypoplasia according to the criteria described by Elise et al with a medial-to-lateral ratio of 0.31.

After administration of antibiotics and local irrigation, under general anaesthesia, the dislocation was reduced, and the wound was closed without repair of the capsule (Fig. 3). Spiral CT angiography of the right leg, performed immediately after reduction, showed no arterial injury. The paraesthesiae over the dorsal aspect of the foot resolved after three days. A below-knee non-weight-bearing cast was applied with the ankle in the neutral position.

Photograph showing the open dislocation of the ankle at presentation.
and retained for 30 days. An ankle brace was used for another two weeks with progressive weight-bearing. Non-steroidal anti-inflammatory treatment was given as prophylaxis against heterotopic bone formation for four weeks.4

Discussion
Pure talotibial dislocations are rare.5,6 Generally because of the intrinsic stability of the ankle they are associated with malleolar fractures, mostly resulting from high-energy trauma such as motor-vehicle accidents, sports injuries and
falls from a height. Only a few cases caused by low-energy trauma have been reported.5,7,9

The talus, according to the studies of Fernandes,10 may dislocate medially or laterally, without associated fractures after application of an inversion or eversion force on a maximally plantar flexed foot. Fahey and Murphy11 described five types of ankle displacement according to the direction of the dislocation: anterior, posterior, medial, lateral, or superior combined. The posteromedial direction is the most common. In our patient the dislocation was medial. There was no history of recurrent sprains and on examination there were no signs of ligamentous laxity. However, there was hypoplasia of the medial malleolus with a medial to lateral ratio of 0.31;8 the reported normal ratio ranges from 0.58 to 0.62.3

On the lateral radiograph the cover of the talus by the tibia measured 0.64, while the normal range is 0.58 to 0.60. This ratio is determined by two angles (b/a) of which angle b is measured between two lines projected from the centre of the talus through its anterior and posterior articular ridge, and angle a is measured between two lines projected from the centre of the talus through the anterior and posterior articular ridge of the tibia.3,5

Other authors agree that immediate reduction decreases the risk of vascular or neurological complications and that reduction, debridement and capsular suture should be followed by immobilisation in a short-leg cast for six weeks.12,13

The repair of disrupted ligaments is controversial. Several authors have recommended repair of the lateral ligaments at the time of debridement.3,14 Others state that repair does not improve ankle function.11,15 It is interesting that despite massive ligamentous disruption, instability is rare2,4 and such types of dislocation, have a good outcome. Our patient did not undergo repair of the ligaments.

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References