

Abstract

Total talar dislocation is a rare injury, which is usually open. We report on a case of closed anterolateral dislocation in a 19 year old, following a fall from a push bike. He was treated with prompt closed reduction. A magnetic resonance imaging scan 6 months later showed no signs of avascular necrosis. At 2 years follow up the patient had a full, pain free, range of motion at the ankle and subtalar joints.

Level of evidence: IV.

Key words: talus, total dislocation, closed reduction

Introduction

Dislocations of the talus are rare and total dislocations even more so, comprising only 3.4% of all major talar injuries¹. Since 1925 there have been less than 90 cases of total dislocations of the talus (where it is dislocated from all 3 of its articulations) reported in the English literature². Such injuries are usually open and also commonly associated with fracture of the talus itself or nearby structures including the malleoli, navicular or calcaneus^{3,4}. As far as we are aware, there are only 6 cases of closed total talar dislocation without concomitant talar or malleolar fracture, which have been treated by closed reduction, described in the literature⁴⁻⁷.

Case Report

We report the case of a male, aged 19 years, who fell from a bicycle travelling at an estimated speed of 15 mph while trying to jump from a ramp. He sustained injury to the left ankle as he landed on the lateral aspect of the foot which was forced into supination. He was unable to weight bear following the injury and presented to the Emergency department with a painful and swollen foot and ankle. Initial assessment by Advanced Trauma Life support (ATLS) survey showed no other injury. On examination the foot and ankle were swollen but the injury was closed (Figure 1a). There was no distal neurovascular deficit or compartment syndrome. Radiographs of the left foot and ankle revealed a total (anterolateral) talar dislocation (Figure 1b & 1c) and

a fracture of the base of the 5th metatarsal. There were no talar or malleolar fractures. Due to the unstable nature of the injury it was decided the patient be taken, on an urgent basis, to the operating theatre for closed manipulation under anaesthesia (MUA). This was performed according to a technique described by Mitchell in 1936⁸; an assistant maintained knee flexion at 90 degrees, so as to relax the posterior leg muscles and provide counter traction to the primary surgeon, who provided longitudinal traction, holding the foot and heel in a neutral position. After a suitable period of traction, initial medially directed pressure was applied to the talus from its lateral aspect followed by addition of posteriorly directed pressure. This was sufficient for spontaneous reduction to be achieved, which was confirmed using image intensifier in theatre (Figure 2a, 2b). The ankle was then screened through a range of motion under image intensifier control and no instability was demonstrated. For this reason there was no requirement for surgical K-wire stabilization. Post-operatively the foot was immobilized in a full below knee non-weight bearing plaster for six weeks. A computerised tomography (CT) scan performed the following day confirmed congruent reduction and fracture of the fifth metatarsal base but no other bony or chondral injuries. Radiographs taken three weeks after discharge showed maintenance of reduction. At six month follow up the patient had no ankle or subtalar joint pain and had a full range of ankle and subtalar motion. MRI confirmed no evidence of avascular necrosis of the Talus (Figure 5). At 2 year follow-up the patient had returned to all activities with out any pain or instability of the ankle or hindfoot and there were no radiographic features of osteoarthritis.

Discussion

Total talus dislocation without fracture is extremely rare. Anterolateral dislocations are the most common⁹ and occur as a result of excessive supination¹⁰. There are only a very small number of reports of total talus dislocation without concomitant ankle or hindfoot fractures^{2,3,11,12}. The talus has complex articulations making it very difficult to dislocate, even surgically⁴ and when dislocated all its vascular connections can be disrupted⁹. In his 1988 series Ritsema reported avascular necrosis (AVN) in about half of cases¹³. With this high risk of AVN the goal should be prompt reduction. Historically open reduction was favoured¹³, however, one of the major nutrient arteries of the talus enters through the dense superior talonavicular ligament, which extends as a broad band from the dorsal surface of the neck to the dorsal periphery of the navicular. If small strands of this strong ligament remain attached, avascular necrosis may be avoided. This is more likely in closed dislocations and, therefore, closed reduction should be attempted first^{4,7}. Indeed, in their review of talar injuries over 16 years, Wagner et al. treated only 6 total talus dislocations, all of differing severity and direction and all requiring open reduction with unanimously poor outcomes¹⁴. The first radiologic sign of avascular necrosis can be observed anywhere between 4 weeks and 6 months after the accident¹⁵ and it is important to consider this during the follow up period with serial radiographs or MR imaging⁶. Post operative weight bearing status remains a contentious issue although

favourable outcomes have been demonstrated in the literature after early weight bearing^{4,8,16}. Post traumatic arthritis may occur in any, and all, joints involved⁴ but if fracture is not present this is extremely difficult to predict.

Conclusion

The favourable outcome in this case is most likely to be due to rapid treatment and avoidance of surgical violation of tissues around the talus that contained its remaining vascular supply. This case demonstrates early reduction by closed means represents a safe and effective treatment of this rare, and potentially disastrous, problem. If the joint is stable after reduction then 6 weeks non-weight bearing immobilization in cast followed by progression to weight bearing and serial radiographic assessment for avascular necrosis can be associated with good outcome.

References

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