CASE REPORT

Closed posterior ankle dislocation without associated fractures: a case report

Islam Mubark*, Shahed Anwar, and Keith Hayward

Trauma and Orthopaedic Surgery, Burton Queen’s Hospital, Burton upon Trent DE13 0RB, UK

*Correspondence address. Trauma and Orthopaedic Surgery, Burton Queen’s Hospital, Burton upon Trent DE13 0RB, UK. Tel: +44-74-75-50-2329; E-mail: Islam.mubark@Burtonft.nhs.uk

Abstract

Ankle dislocation without associated fractures, also known as pure ankle dislocation is a rare injury. It is usually the result of high energy trauma. It could be a combination of predisposing anatomical factors plus certain ankle position at time of injury that produce this peculiar injury. In most cases it is managed conservatively with urgent reduction, 6–9 weeks of immobilization followed with intense physiotherapy. The outcome after these injuries is generally good where most of the patients in reported cases managed to return to the preinjury level of activity.

INTRODUCTION

Ankle dislocation without associated fracture also known as pure ankle dislocation is an extremely rare injury with few cases reported in literature. We present a case of pure posterior ankle dislocation in adult patient with discussion of initial management, radiological findings and outcome at 6 months follow up.

CASE REPORT

A 30-year-old male patient presented to Emergency Department (ED) following a run over injury. The patient described the mechanism of injury as moving his body over his run over foot. On clinical examination, there was obvious deformity and swelling of the right ankle. Dorsalis pedis pulse was felt but weak compared to the contralateral side with a capillary refill time under 3 s. The posterior tibial artery could not be palpated because of the deformity. X-rays showed posterior ankle dislocation without associated fractures (Fig. 1). Urgent reduction of the dislocation was done under sedation in ED. The knee was first flexed to relax the tendon Achilles then longitudinal traction with gentle forward force applied to the heel with immediate reduction of the deformity achieved. The foot was reassessed for vascular status. Triphasic pulse in both drosalis pedis and posterior tibial artery was detected with hand held Doppler. Ankle was immobilized in posterior below knee back slab to accommodate for swelling and check x-rays confirmed reduction of the ankle joint (Fig. 2). CT scan was done afterwards to define any subtle incongruity or osteochondral fragments entrapped in the joint. CT did not show any associated fractures and showed congruent reduction of the ankle joint (Fig. 3). Patient was mobilized touch weight bearing for first 2 weeks. The back slab was changed for weight bearing short leg cast and progressive weight bearing was allowed for the following 4 weeks. At 6 weeks follow up, plaster was removed and on examination patient still had moderate tenderness over the medial joint line and deltoid ligament area. Also, patient had limited range of plantar and dorsal flexion. Referral for physiotherapy was done for start of functional rehabilitation and range of motion exercises and in mean time MRI was done to delineate extent of ligamentous injury. MRI showed bone bruising of the lateral malleolus, medial malleolus and lateral talus (Fig. 4). The anterior talofibular ligament (ATFL), calcaneofibular ligament (CFL), posterior talofibular ligament (PTFL) and deltoid ligaments were sprained but intact. At 12 weeks follow up, patient could walk normally without any symptoms of instability and achieved 20° of both plantar and
Ankle dislocations without fractures are rare injuries. They can occur due to high energy trauma. The stability of the ankle joint is maintained by the medial and lateral ligaments. The medial side ligaments include the deep and superficial deltoid ligaments, while the lateral side ligaments include the ATFL, CFL, and PTFL. The talus is secured in the ankle mortise, and any forces that displace it can cause dislocation.

Proposed mechanism of pure dislocation is that when the ankle is maximally dorsiflexed, the talus is less secured in the ankle mortise due to its unique rhomboidal shape and additional forces, such as inversion, can dislocate the talus from the ankle mortise.

Moehring et al. suggested that some factors such as medial malleolus hypoplasia, ligamentous laxity, and peroneal muscle weakness can predispose the ankle to pure dislocation.

Expedient reduction of these injuries is important to relieve pressure on the neurovascular structures, avoid skin compromise, and reduce swelling. Closed reduction under general anaesthesia or sedation is usually the recommended treatment. After reduction, the joint is immobilized for 6–9 weeks. CT is recommended to exclude entrapped osteochondral fragments. MRI is not routinely requested but can be helpful in defining the extent of ligamentous injury, chondral injury, and early arthritic changes.

According to several authors, instability is uncommon as well as joint stiffness [5, 6]. Elisé et al. [7] reported in their series of 16 cases an incidence of 25% of degenerative changes in the ankle joint.

In conclusion, pure ankle dislocation is a rare injury that needs urgent reduction and immobilization for 6 weeks followed by aggressive physiotherapy and rehabilitation. In general, the outcome of these injuries is good with most patients expected to return to normal preinjury level of activity.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest whatsoever arising out of the publication of this article.
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