

Talo-navicular dislocation with concomitant navicular fracture, a rare midfoot injury: A case report

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Abstract

Talon-navicular dislocation fracture is an extremely rare injury. It has a poor functional prognosis, since in most cases it is complicated by osteoarthritis of the talonavicular joint.

We report a case of a closed talonavicular dislocation fracture in a 29-year-old patient following a road traffic accident. Reduction was performed urgently, with talo-navicular fixation using two k-wires. A cast was applied for 8 weeks, followed by rehabilitation sessions with good outcome at last follow-up

Keywords: Dislocation; Talo-navicular joint; Fracture; Navicular

1. Introduction

Talo-navicular dislocation fractures are uncommon injuries typically resulting from high-energy trauma, such as motor vehicle accidents, falls from significant heights, or severe rotational forces (1). The prevalence of concomitant lesions with the dislocation of the talo-navicular joint can reach 90% (2). These injuries involve a disruption of the talonavicular joint, a key structure in maintaining foot stability and facilitating movement.

Through this case study, we will explore the primary mechanisms underlying this injury and outline the key principles of its management.

2. Case report

A 29 years old female, Victim of a road traffic accident (pedestrian hit by a car) landing on the right foot in a dorsiflexed position. The initial clinical examination revealed a stable patient with severe mid-dorsal deformity pain of the right foot, there were no skin laceration and with no neuro-vascular abnormalities

The X-ray of the right foot and ankle in anteroposterior and lateral views (figure 1), revealed a fracture of the tarsal navicular bone with dorsal talo-navicular dislocation, accompanied by a non-displaced fracture of the base of the 4th and 5th metatarsals.

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Figure 1 Anteroposterior and lateral views showing a fracture of the tarsal navicular bone with dorsal talo-navicular dislocation

Closed reduction of the dislocation was performed under general anaesthesia, but it remained unstable, hence the indication for open reduction and stabilization was taken. The patient underwent surgery via a dorsal approach, revealing a rupture of the dorsal ligaments and the capsule, along with a fracture of the tarsal navicular bone. An anatomical reduction was performed using two K-wires placed (figure 2).



Figure 2 Post-operative x-rays showing the anatomical reduction

The patient was immobilized initially in a posterior splint for 5 days and subsequently in a short-leg cast for 8 weeks, both type of immobilization were well tolerated. The patient started the rehabilitation program directly after cast removal and gradual weight bearing was introduced and full weight bearing was reached after 12 weeks. At the last follow up, 6 months later the patient was pain free with no signs of laxity and full range of motion, the x-rays were unremarkable (figure 3).



Figure 3 X-rays at 6 months follow-up

3. Discussion

In 1975, Main and Jowett (2) were the first to introduce a system for categorizing injuries into five types (medial displacement, longitudinal impact injuries, lateral displacement, plantar displacement, and crush injuries) based on the direction of the deforming force applied and the resulting displacement of the midtarsal joint. They defined a medial or lateral swivel dislocation as a subtalar dislocation in which the calcaneocuboid joint and subtalar joint remain intact but the navicular is medially or laterally dislocated from the talus (2). Regarding the underlying mechanism, the intact talocalcaneal ligament acts as the axis of rotation, rotating the foot medially or laterally without inversion or eversion. This is distinct from a subtalar dislocation, in which the talocalcaneal ligament is disrupted.

In the majority of reported studies in the literature, the talo-navicular dislocation is associated with navicular, cuboid and metatarsals fracture (3,4,5)

Pehlivan et al.4 reported a case of medial peritalar dislocation with talo-navicular dislocation and subluxation of the talocalcaneal joint associated with a talar head fracture. However the pure isolated medial talo-navicular joint dislocation remains extremely rare (6) different approaches for treating a talo-navicular dislocation have been proposed, including closed reduction, as well as open reduction with or without internal or external fixation (2, 3,7,8).

Williams et al. published closed reduction and casting without internal fixation was possible [4], Miller et al., Richter et al and Ip and Lui have all advocated the importance of internal fixation in these injuries (9,10,11)

4. Conclusion

Our patient had a talo-navicular dislocation accompanied by concomitant navicular fracture resulting from high-energy trauma. Open reduction, combined with fixation of the talo-navicular joint using K-wires and immobilization with a cast for 8 weeks leads to a good functional outcomes.

Compliance with ethical standards

Acknowledgement

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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