

Lateral Subtalar Dislocation of the Foot: A case report

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Subtalar dislocation, also known as peritalar dislocation, refers to the simultaneous dislocation of the distal articulations of the talus at the talocalcaneal and talonavicular joints. Subtalar dislocation can occur medially or laterally with resulting deformity. Medial dislocations comprise up to 85% of subtalar dislocations whilst lateral subtalar dislocations are less frequent and in 15% to 20% of dislocations. Closed reduction and immobilization remains the treatment of choice. The tibialis posterior, talar head impaction, and entrapment of the joint capsule may cause difficulty in closed reduction of lateral dislocations; hence open reduction may be necessary. This case report presents an unsuccessful closed reduction of a lateral subtalar dislocation which required an open reduction technique using wire stabilization.

Key words: Subtalar dislocation, talus, trauma, closed reduction, open reduction.

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Subtalar dislocation is a rare rearfoot injury, it disturbs the normal anatomy and function between the talus, calcaneus and navicular bone.^{1,2,3,7,10} The talocalcaneal and talonavicular joints can be dislocated simultaneously, without a fracture of the neck of the talus. This has also been referred to as a peritalar or subastragalar dislocation.⁴

Although some dislocations may completely reduce or even partially reduce on its own, there are basically two types of subtalar dislocation reported in the literature. In lateral subtalar dislocation, the head of talus is found medially and the rest of the foot is dislocated laterally. In medial subtalar dislocation, the head of the talus is found laterally and the rest of the foot is dislocated medially.^{4,6}

However, in a lateral subtalar dislocation, the talus can remain fixed while the remaining structures of the foot are dislocated laterally along the talus. It is important to check the stability and congruity of the talus in the ankle mortise with any subtalar dislocation.

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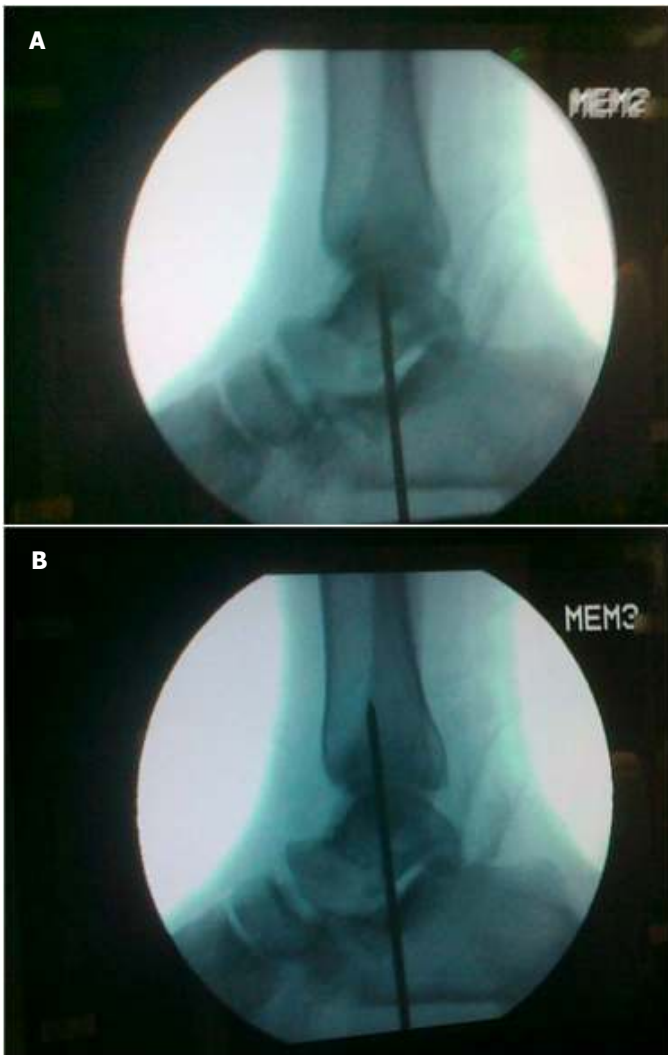
Figures 1A, 1B and 1C Radiographs showing talonavicular dislocation. (A and B). Initial radiograph showing lateral subtalar dislocation without signs of fracture. The talus is displaced along the ankle mortise. (C)

Subtalar dislocations present with an impressive amount of deformity. Medial dislocation has been referred to as an “*acquired clubfoot*”, while the lateral injury is described as an “*acquired flatfoot*”.^{6,7} Lateral dislocations are particularly prone to poor results, due to the frequency of open injuries and associated fractures⁴. We report a case of lateral subtalar dislocation in 35 year-old man in whom closed reduction was unsuccessful hence open reduction was performed.

Case Report

A 35 year-old man, who sustained a high energy trauma while travelling on a two-wheeler. He was then hit by an oncoming tractor. He presented to Bapuji Hospital. The foot was diffusely swollen with a laceration over the medial border of the foot. The skin was distorted and markedly tented over the prominent head of the talus which was felt medially. The posterior tibial artery was not palpable due to severe swelling and the dorsalis pedis artery was palpable. Radiographs showed that the foot along with calcaneum had moved laterally off the talus. (Figs. 1A, 1B and 1C)

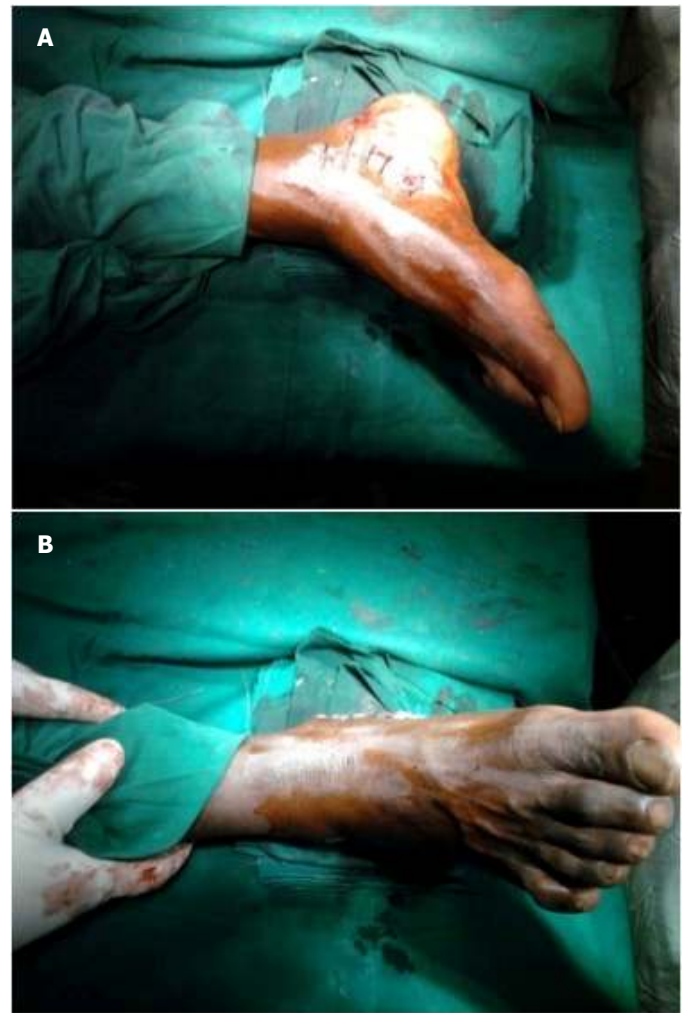
Initially a closed reduction was attempted and this was unsuccessful. The patient was then prepared for surgery for open reduction and stabilization. A medial incision was performed extending the lacerated wound. The posterior tibial tendon was identified. The displaced talus was relocated into the joint after further dissection and reduction. The posterior tibial tendon was retracted and the talus was levered into the position and reduction was achieved. Reduction was confirmed using a computer assisted radio monitor (c- arm). (Fig. 2A and 2B) A thick Kirschner wire was inserted from the calcaneum into the talus to hold the reduction. A below knee splint was applied after placing sterile dressing on the operative site. The splint was then replaced with a windowed cast to inspect the incision daily. The operative reduction was successful. (Fig. 3A and 3B)



Figures 2A and 2B Intraoperative radiographic scans showing insertion of Kirschner wire through the calcaneum.

Discussion

Dislocation of the talus can occur in conjunction with major talus fractures.⁵ However, dislocations can also occur with no associated bony injury or with relatively minimal appearing fractures.^{3,4} Subtalar dislocation, also known as peritalar dislocation refers to the simultaneous dislocation of the distal articulations of the talus at the talocalcaneal and talonavicular joints.^{4,6}



Figures 3A and 3B Intraoperative photographs showing correction of deformity after the reduction of dislocation.

First described by Judcy and Dufaurets⁷ in 1811, clinical reviews of subtalar dislocations are relatively infrequent and generally limited to small numbers of patients. Subtalar dislocation can occur in any direction. Significant deformity is always present. Up to 85% of dislocations are medial.^{5,7} The calcaneus, with the rest of the foot is displaced medially while the talar head is prominent in the dorsolateral aspect of the foot. The navicular is medial and sometimes dorsal to the talar head and neck. Lateral dislocation occurs less often about 10-15%.^{6,7,10}

In a lateral peritalar dislocation, the calcaneus and navicular is displaced lateral to the talus and the talar head is prominent medially.^{4,10} Rarely, a subtalar dislocation is reported to occur in a direct anterior or posterior direction,^{2,7} but these are usually associated with medial or lateral displacement as well.

Between 10% and 40% of subtalar dislocations are open.¹³ Open injuries tend to occur more commonly with the lateral subtalar dislocation pattern and probably as the result of a more violent injury. Long term follow-up demonstrated very poor results with open subtalar dislocations.¹³

The majority of subtalar dislocations can be reduced in a closed manner in the emergency department with the use of local anesthesia and procedural sedation. Early reduction is essential to prevent loss of skin due to pressure necrosis from the underlying dislocation.⁴ In approximately 10% of medial subtalar dislocations and 15% to 20% of lateral dislocations, closed reduction cannot be achieved.^{11,12} Soft tissue interposition and bony blocks have been identified as factors preventing closed reduction.¹¹ With medial dislocations, the talar head can become trapped by the capsule of the talonavicular joint, the extensor retinaculum or the extensor tendons, or the extensor digitorum brevis muscle.^{11,12} With a lateral dislocation, the posterior tibial tendon may become when firmly entrapped and present as a barrier to closed and even open reduction.^{7,12}

In 1954, Leitner¹² initially proposed a mechanism by which the flexor retinaculum is disrupted, allowing the tendon to drape over the talar head and preventing reduction. In 1982 DeLee, et al.,⁴ in their case series three of the four lateral dislocations required open reduction. Of these three, the posterior tibial tendon was the obstructing agent in two and a fracture of the head of the talus prevented closed reduction in one.

In our case presentation, the patient had sustained high energy trauma. Initially a closed reduction was attempted, but was unsuccessful. In the open reduction, we identified the tibialis posterior tendon as obstructing the reduction. Open reduction with Kirschner wire or Steinman pin reduction is shown to successfully reduce a lateral subtalar dislocation in this case report.

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