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Case Report

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Closed medial subtalar dislocation: case report and review of the literature

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ABSTRACT

A rare case of medial subtalar dislocation is presented and the literature concerning this injury is reviewed. Subtalar joint dislocations are rare and often the result of a high-energy trauma. These talar dislocations represent 1%-2% of all dislocations. A case of uncomplicated medial subtalar joint dislocation managed by closed reduction under anaesthesia with excellent functional outcome is presented. In cases of open subtalar joint dislocation immediate reduction, wound debridement and if necessary (external) stabilization is critical. Up to fifty percent of patients suffering complicated injury are at risk of developing complications such as avascular necrosis of the talus. Other long-term sequelae include osteochondral fracture and subtalar joint instability.

Keywords: Dislocation, Medial, Subtalar joint, Closed reduction

INTRODUCTION

Subtalar joint dislocation is defined as a simultaneous dislocation of the subtalar (talocalcaneal) and talonavicular joint.[1] It's a dislocation in which the talus maintains its relationship with the bones of the leg while the calcaneus and navicular move under it. Subtalar dislocations are rare and often the result of high-energy trauma.[1,2] Rarity of this injury can be attributed to the presence of strong ligaments that maintain the normal anatomical relationship of the talus and the calcaneus, the strong biomechanical properties of the ankle and the tight joint capsule.[2,3] The trauma causing this type of injury is frequently a fall from considerable height or a motor vehicle accident with inversion of the foot.[4]

Subtalar joint dislocations are frequently accompanied by fractures of the adjacent tarsal and metatarsal bones. Severe soft tissue injury can also be present.[1] The currently used classification of subtalar dislocations was introduced by Broca in 1853 and adjusted by Malgaigne et al in 1856.[5] Dislocations of the talus are classified based on the direction in which the foot is dislocated.[1,6,7] In about 72% of patient the talus is dislocated medially, lateral dislocation is present in 26% of patients and posterior or anterior dislocation in the remainder of patients.[1] Medial subtalar joint dislocations are produced by forced inversion with the hindfoot in equinus.[1,6,8,9] Pure ligamentous dislocations have an excellent prognosis after proper reduction.[8] Diagnosing additional injury is essential, as fractures of the lateral talar process and the sustentaculum tali may lead to the rapid development of posttraumatic osteoarthritis of the subtalar joint.[10]

We report the case of a patient suffering closed medial subtalar joint dislocation and a comprehensive review of the available literature on medial subtalar joint dislocations.

CASE REPORT

On the 9th, November 2017 a 30-year-old male presented to the Emergency Department of Mp Shah hospital with a

2 hour history of pain and deformity of the right foot after eversion trauma while jumping over a closed gate at night. Initial trauma examination revealed a haemodynanically stable patient with supinated fore foot (Figure 1A). During secondary survey no other injuries were detected. Initial attempted reduction under sedation at casualty by the resident registrar failed. Initial x-rays (Figure 1C) revealed subtalar dislocation and this was further confirmed by CT scanning (Figure 1C). The patient was taken to the operating theatre within 6 hours for closed reduction under General Aanesthesia after failed attempt at reduction under sedation. The dislocated talus was immediately reduced and additional kirschner wires used for stabilization (Figure 3). A postoperative computed tomography (CT) scans showed congruent ankle and subtalar joints. There were no fractures of the adjacent tarsal and metatarsal bones.

Figure 1A: Initial foot alignment prior to reduction.

Figure 1B: Initial X-ray (pre op).

Figure 1C: CT scan before reduction.

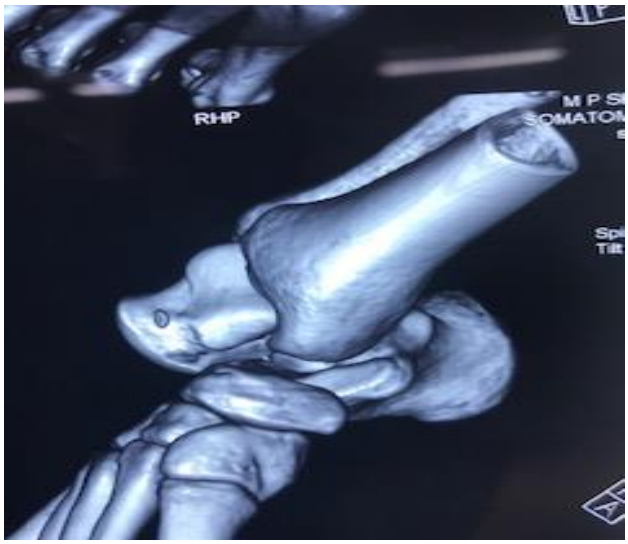

Figure 2: The CT before closed reduction.

Figure 3: Post reduction picture of the foot.

Six weeks postoperatively the kirschner wires were removed during a visit at the outpatient clinic. At this time the patient started physical therapy and commenced bearing full weight on the affected leg. Full range of motion of the ankle resumed at 3 months of follow up.

DISCUSSION

This study gives a comprehensive review of the literature concerning medial subtalar joint dislocation, treatment and expected outcome. From literature review conducted Eighty-seven percent of patients were male.[6,7,11,12] These injuries are more common in young patients with a mean age of thirty-four years. Subtalar dislocations evenly affect the left and right lower limbs.

Closed medial subtalar dislocations are treated with reduction and below the knee casting is successful in most cases. Additional fixation with k-wire fixation is done for additional stability. In most studies non-weight bearing for a mean period of seven weeks is done (range 4-12), after which the cast is removed and patients were allowed to bear weight. Several studies provide patient reported outcome with the use of the American Orthopaedic Foot and Ankle Society score (AOFAS), which has not been validated for this purpose.[6] The mean AOFAS score at follow-up is 82.[6] Ankle osteoarthritis and avascular necrosis of the talus head are reported as common complications. Patients with avascular necrosis are eventually treated with arthrodesis of the ankle in most cases. The literature review reports avascular necrosis or deep infection in one third of patients with compound lateral subtalar dislocation, compared to no avascular necrosis or deep infection in twenty patients with closed subtalar dislocation. Complicated injury is the main predictor of poor outcome. Avascular necrosis or deep infection can be expected in about 50% of cases.

Medial subtalar joint dislocation is a high-energy injury with potential long-term complications that affect foot mobility. The number of patients reported with this type of injury is therefore small form the available literature. Immediate reduction under anaesthesia is key and when necessary additional stabilization should be performed at the earliest opportunity.

In all cases, in addition to plain ankle and foot radiographs, a CT-scan should be performed after reduction to document additional bony injury to the subtalar area and adjacent bones.[10] Additional injury is often underestimated in a plain radiograph of the hindfoot, but can have serious consequences such as osteoarthritis or chronic instability if undetected.[10]

There is no consensus on the duration of immobilization after reduction. In uncomplicated injury an early weight-bearing protocol is advocated, after a lower leg cast for a period of 3-4 weeks. In complicated cases with instability the use of an external fixator might be necessary, hence delaying ambulation for a period of upto 6-12 weeks depending on the extent of additional fractures of the tarsal and metatarsal bones.[13]

CONCLUSION

Excellent outcome can be expected in patients with uncomplicated medial subtalar dislocation if immediate closed reduction is done. In case of complicated subtalar joint dislocations open reduction and appropriate joint reduction with additional stabilization using an external fixation are critical. This review helps surgeons treating patients with a medial subtalar dislocation to discuss treatment and prognosis of this severe injury of the foot.

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