Medial Subtalar Dislocation: A Case Report of a Rare Orthopaedic Injury

Kayastha K, Shrestha R, Dahal A, Timalsina A, Verma A, Milan JN

Department of Orthopedics and Traumatology
Dhulikhel Hospital, Kathmandu University Hospital,
Kathmandu University School of Medical Sciences,
Dhulikhel, Kavre, Nepal.

Corresponding Author
Rohit Shrestha
Department of Orthopedics and Traumatology,
Dhulikhel Hospital, Kathmandu University Hospital,
Kathmandu University School of Medical Sciences,
Dhulikhel, Kavre, Nepal.
E-mail: rohitshrestha@kusms.edu.np

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ABSTRACT

Subtalar dislocations are uncommon clinical entities. This case involves a 34-year-old female who sustained a medial subtalar dislocation following a fall. Immediate closed reduction and immobilization achieved joint congruency, confirmed by CT. Following structured rehabilitation, the patient had full functional recovery at one year, highlighting that prompt reduction is vital.

KEY WORDS

Closed reduction, Dislocation, Subtalar dislocation, Subtalar joint, Trauma

INTRODUCTION

Subtalar dislocations are rare, accounting for fewer than one percent of all traumatic dislocations.[1] The talocalcaneal and talonavicular joints provide anatomical and biomechanical stability, making this an uncommon injury that primarily results from trauma usually high-energy sources while sports related activities can also result in this kind of injury.[1,2]

Anatomically, subtalar dislocation has been further classified as medial, lateral, posterior and anterior among which medial dislocation being the most common. Medial subtalar dislocation is a rare entity usually caused by high energy trauma when the foot is forced into inversion and plantar flexion of foot with the sustentaculum tali acting as a fulcrum for the posterior part of talar body.[3,4] A medially displaced heel, inversion and plantarflexion of the foot are the outcomes of medial dislocation while that in lateral dislocation are usually foot in eversion and abduction associated with more high energy trauma or open injuries.[5]

This type of injury is rare, and our case demonstrates that with prompt diagnosis, appropriate reduction techniques, and structured follow-up, excellent functional outcomes can be achieved. As such, this case holds clinical relevance and educational value, particularly for Orthopaedic surgeons and emergency physicians. This case report has been reported in accordance with 2023 Surgical Case Report (SCARE) guidelines.[6]

CASE REPORT

A 34-year-old female presented to a tertiary care center following a fall from a ladder while descending stairs. She sustained an injury to the right foot and ankle after landing in a plantar-flexed and inverted position. The patient complained of pain and deformity over right foot. She was unable to stand or walk with the injured foot following the traumatic event. Also, there was swelling and bruising over the right foot. There was no history of previous ankle injury, connective tissue disorders or any congenital disorders. On examination the general condition was fair. Local examination of right foot revealed a deformity with the foot medially rotated and inverted. Swelling was present over right ankle. There were bruises over the ankle joint but no external wounds. Distal neurovascular status was intact (Fig. 1). A plain radiograph of right foot and ankle revealed dislocation of talocalcaneal and talonavicular joint (Fig. 2)

Figure 1. Medially rotated right foot and ankle.

Figure 2. Plain Radiograph of right ankle revealed medial subtalar dislocation.

Under local anesthesia, closed reduction was carried out with the foot in dorsiflexion and eversion, the knee flexed to 90°, longitudinal traction provided to the heel, and countertraction applied to the leg. Light pressure was also applied to the palpable head of the talus. The ankle was stable on examination. Once reduced, the limb's neurovascular status was reassessed and found to be intact. A below knee posterior slab was applied in order to immobilize the limb. Later, the reduction was confirmed radiologically by doing a post reduction radiograph (Fig. 3). Computed Tomography (CT) confirmed congruent reduction and also ruled out any associated fractures such as fracture neck of talus (Fig. 4).

Figure 3. Plain Radiograph of right ankle after reduction.

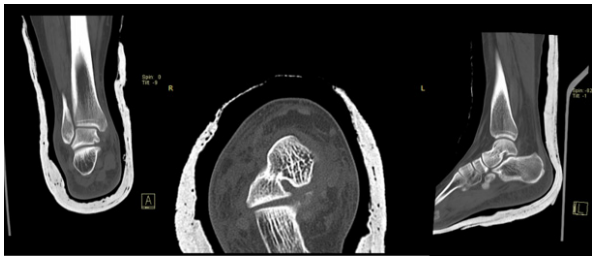

Figure 4. Plain CT scan of Right foot and ankle after reduction.

The patient was consistently followed up at our center. To allow sufficient time for the soft tissues to heal, the patient was advised to remain non-weight bearing. After a period of six weeks, active range of motion exercises for the foot and ankle were initiated and the patient was transitioned to full weight bearing since then. Three months post-injury, the patient showed significant improvement and was comfortable with her daily activities. After one year of injury, patient was comfortable doing her daily activities and range of motion of foot and ankle was full and free in all direction. She had no pain, swelling, joint stiffness and no evidence of avascular necrosis.

The Foot and Ankle Ability Measure (FAAM) score at six weeks was 61.9%, at three months was 70.23% and one year was 98.8% and the American Orthopedic Foot and Ankle Society (AOFAS) score at six weeks was 77/100, at three months was 80/100 and one year was 100/100.

DISCUSSION

Medial subtalar dislocation causes a deformity of the foot similar to an acquired clubfoot. Profound pain and restricted range of motion may be observed in such cases requiring immediate reduction. The diagnosis of medial subtalar dislocation was confirmed via plain radiographs. The anteroposterior view demonstrated medial displacement of the calcaneo-navicular complex relative to the stationary talus, while the lateral view revealed a complete disruption of the talonavicular head-cup relationship, with the talar head positioned superiorly.[1,2]

Following reduction, CT scan enables evaluation of the talonavicular and subtalar joint congruence as well as any related abnormalities that might necessitate surgery. Bony barriers to reduction, such as an interposed osteochondral fragment or navicular impaction against the talus head, may be visible on the CT scan in the case of irreducible lesions.[5,7] In our case there was no such other accompanying bony lesion and the treatment of choice for injury is immediate closed reduction and immobilization.[1,3,4] In addition, subtalar dislocation may sometimes be associated with talar neck fracture which may be masked by dislocation and not visible in initial plain radiograph, thus CT scan is essential in such case to avoid missing such associated fracture which needs to be fixed. In about 44% of cases of subtalar dislocation, there are accompanying fractures however in our case there was no fractures.[8] Gerard et al. reported an unusual case of subtalar dislocation associated with Hawkins type-II talar neck fracture which was only seen in CT scan.[8] The dislocation was reduced under anesthesia and osteosynthesis with two Kirschner wires was done.[9]

The first step in treating subtalar dislocation is closed reduction. In approximately 14-47% of subtalar dislocations, closed reduction fails; this is often more common in lateral dislocations and in cases following high energy

trauma. Palma et al. reported lateral dislocation which were not reducible by means of closed reduction due to interposed posterior tibialis tendon and required open reduction.[10,11] Immediate open surgery requiring absolute joint reduction is required in cases involving irreducible subtalar dislocations, soft tissue damage, or concomitant fractures.[12]

The prognosis of these types of injury is relatively good except in cases of associated fractures and there is an estimated risk of avascular necrosis of talus in four percent of all cases and thirty-one percent risk of subtalar osteoarthritis.[13]

Medial subtalar dislocation is rare but serious injury that requires prompt diagnosis and management to prevent long term complications. This case highlights the importance of early recognition, careful assessment, and timely closed reduction followed by appropriate immobilization and rehabilitation. With early intervention and close follow-up, patients can achieve excellent functional outcomes. A high index of suspicion and adherence to treatment protocols are essential to optimize prognosis and minimize the risks of complications such as avascular necrosis or post traumatic arthritis.

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