



## Traumatic Subtalar Joint Dislocation: Management and Prognosis

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### Abstract

Subtalar dislocation is defined as a separation of the talocalcaneal and talonavicular joints, usually caused by high-energy mechanisms, these are extremely rare injuries, the series of the literature reporting only a few dozen cases spread over several decades. The most common type is the medial dislocation resulting from an injury in inversion. They can be isolated (pure) or associated with a neighboring fracture (tibial pilon, talus, calcaneus) see open or closed. Closed reduction and immobilization remain the mainstay of treatment, X-ray and CT scan should be performed to assess the alignment and fractures. We report the functional results of two cases of a pure subtalar dislocation in two young men of 24 and 26 years on a 2-year delay.

**Keywords:** Talus; Subtalar joint; Dislocation; Arthritis; Bone necrosis

### Introduction

Subtalar dislocation, often also called peritalar dislocation [1], is a very rare injury in which the talocalcaneal and talonavicular joints are dislocated simultaneously [2,3], due to weakness of the ligaments that accord them. It was first described in 1811 by Judcy [4] and Dufauret [5] separately. Medial subtalar dislocations predominate in the literature, representing about 80% of reported dislocations. This injury is also called acquired clubfoot because of the appearance of the foot. We report two cases of this uncommon injury as well as its functional results over 2 years.

### Case Series

#### Case 1

A 24-year-old man fell from a height with his foot stuck on the ground, causing him pain and deformity of his ankle with total functional importance on clinical examination. The ankle was edematous with shortening of the dorsum of the foot, which was in an Equinus position (acquired clubfoot). The head of the talus was palpable under the external malleolus, any active or passive mobilization of her foot was impossible and very painful and presence of signs of skin suffering such as external ecchymosis without opening, with a vascular-nervous examination without particularity (Figure 1, 2).

The radiographic examination revealed an external displacement of the mortise concerning the calcaneus and the navicular, which were internally displaced, resulting in a medial subtalar dislocation without an associated fracture (Figure 3).

The immediate reduction was performed under sedation. The knee flexed to relax the Achilles tendon; reduction was successfully achieved by an external maneuver. Manual traction on the foot with counter traction on the leg combined with direct digital pressure on the head of the talus allowed for a smooth reduction.

Post-reduction radiographs showed normal and stable alignment of the subtalar and talonavicular joints, without osteochondral damage (Figure 4).

#### Case 2

A patient aged 26 years who was a victim of a traffic accident whose mechanism is a pedestrian hit by a car, on admission the patient presents with excruciating pain in his right ankle which was deformed with an aspect of acquired clubfoot, he presents a graze under external malleolar (Figure 5), the vascular and nervous examination is without particularity, the radiological assessment to objectify a medial subtalar dislocation without other bone injuries (Figure 6).

The patient underwent a reduction of his dislocation under sedation, the post-reduction

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**Figure 1-2:** Clinical picture on admission, the appearance of an acquired clubfoot with a subtalar dislocation.



**Figure 3:** X-ray, front, and side, showing the subtalar medial dislocation.



**Figure 4:** Post-reduction radiograph: alignment of anatomical landmarks without associated lesions.



**Figure 5:** Clinical aspect of a medial subtalar dislocation.



**Figure 6:** X-ray of the ankle showing a medial subtalar dislocation.

radiograph confirmed the stabilization of the reduction concerning the anatomical-radiological criteria of the ankle and without associated lesions, followed by mobilization with a circular cast to be kept on for 8 weeks, followed by active and passive rehabilitation, with satisfactory results for the patient.

## Discussion

Subtalar dislocations are very rare lesions, the series in the literature reports only a few dozen cases spread over several decades, representing about 1% of total joint dislocations [6], the first case reported in the literature dates back to 1803. It most often affects young people either during a traffic accident or a fall from a high height. It is a particular entity and is defined by the mass displacement, in the frontal plane of the calcaneo-pedis block, around the talus, whose body remains in place in the tibiofibular mortise. The line of displacement thus involves the talonavicular and subtalar bones and respects the cuboid-calcaneal bone. This is a dislocation of the torsional couple respecting the calcaneocuboid bone [7].

The mechanism of the medial subtalar dislocation is a force inversion of the foot blocked on the ground causing ligamentous tears in a specific chronological way. First, the dorsal talonavicular ligament, then the two interosseous ligaments, and finally the calcaneofibular ligament. Lateral dislocation begins with the eversion of the foot. First, the deltoid ligament is disrupted, then the interosseous ligament and the talocalcaneal joint are disrupted, followed by the dorsal talonavicular ligament [8]. Lateral dislocation often results in injury to the posterior tibial tendon. The trauma is therefore more severe. Medial dislocation is more common than lateral dislocation [9,10], between 10 and 40% of subtalar dislocations are open [11]. Open injuries tend to occur more frequently in lateral subtalar dislocation and long-term follow-up has shown very poor outcomes with open subtalar dislocations [11].

To avoid soft tissue and vessel complications, early diagnosis of a clear type of dislocation, and early reduction are key factors for the

treatment of subtalar joint dislocation, once the diagnosis is confirmed reduction should be started urgently under sedation with scopic control to avoid damaging the blood supply around the talus and reduce compression and necrosis of the skin [12,13]. After successful reduction, the associated fractures should be treated at the same time. Although the closed reduction is easy to achieve, there is still a failure rate of about 20%, and manual reduction of the lateral dislocation is more difficult to achieve [14]. Regardless of the method of reduction, the subtalar joint is usually stable after closed or open treatment and does not require internal fixation. It is recommended that the limb be immobilized in a cast boot for 3 to 6 weeks without support. The prognosis of these injuries is relatively good in most authors except in cases of skin opening or associated fracture. The risk of talar necrosis is estimated at 4% and that of subtalar osteoarthritis at 31% [15].

## Conclusion

Pure medial subtalar dislocation is a rare traumatological condition, its diagnosis is easy, and treatment often consists of reduction by external maneuver under general anesthesia, except in cases of irreducibility due to ligament incarceration, when surgical reduction is required. These lesions have a good prognosis except in

cases associated with a skin opening.

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