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Pure Medial Subtalar Dislocation

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Abstract

Introduction: Pure medial subtalar dislocation is very rare and therefore rarely reported. A case treated orthopedically and evaluated in the short term is described in this work. Case Report: An 18-year-old student suffered a blunt trauma to the left ankle during a soccer match. He landed on the outside of his foot in a slight inversion position after a high-altitude duel. He presented with pain and an inversion deformity of the foot and varus of the ankle. Radiological investigations revealed a pure medial subtalar dislocation. Closed reduction and cast immobilization were performed, followed by functional rehabilitation. At 6 months' follow-up, the ankle was functionally and radiologically satisfactory. Conclusion: Pure medial subtalar dislocation is a rare injury that can occur in adolescents following low-energy trauma. Its prompt treatment yields satisfactory radiological and functional results.

Keywords

Low Energy Trauma, Orthopedic Treatment, Pure Medical Subtalar Dislocation

1. Introduction

Subtalar dislocation is a rare injury that accounts for only 1% to 2% of all dislocations [1]. It is characterized by simultaneous dislocation of the talo-calcaneal and talo-navicular joints [2] [3]. It can occur medially, laterally, anteriorly, or posteriorly [4]-[6]. Medial subtalar dislocation, also called "basket foot" or "acquired clubfoot" because of its resemblance to congenital clubfoot, is more frequent [7] [8]. It accounts for approximately 80% of all cases [5]. It generally results from high energy trauma, involving an inversion force directed toward the subtalar joint [7]. Its management must be rapid by close external reduction, under sedation; followed by a period of four to eight weeks of plaster cast immobilization [3] [8]; and early rehabilitation in order to obtain the best functional results [3].

This injury is often associated with fractures of the calcaneus, talus or navic-

ular [1]. Therefore, the pure form is very rare; so rarely reported.

A case treated orthopedically and evaluated in the short term is described in this work.

2. Case Report

An 18 years old student, without any medical and surgical historical background, reportedly suffered a blunt trauma to the left ankle during a football match. He reportedly landed on the ground on the outer edge of his foot, slightly inverted, after a high-altitude duel. He was admitted to the medical and surgical emergency department two hours after the trauma, for painful ankle and inversion deformity of the foot and varus ankle. The neurovascular examination was normal. The skin was healthy figure (**Figure 1**).

The standard frontal and lateral x-ray of the ankle showed a medial talocalcaneal and talonavicular dislocation. This routine assessment was completed by a CT scan of the ankle, which confirmed the lesions found on standard radiography and eliminated any associated bone or osteochondral lesions (**Figure 1**).

Figure 1. Clinical (a), and radiographical (b)-(g) presentations of a pure medial subtalar dislocation.

Under sedation, a close reduction by external maneuver was performed 4 hours after the trauma. The patient was in supine position on a hard surface, and mediolateral pressure was applied to the calcaneus, combined with counterpressure on the distal end of the leg. This reduced the dislocation. The ankle was immobilized with a cast for 4 weeks (**Figure 2**). Functional rehabilitation began as soon as the cast was removed and continued for 3 months.

At 6 months follow-up, the ankle was painless and flexible. There was no gait disturbance or limitation in activities of daily living. The ankle and foot were well

aligned compared to the healthy side. The Kitaoka score assessing ankle pain, function and alignment of the Ankle [9] was 100/100.

The reduction was maintained with no signs of post-traumatic osteoarthritis on radiographs (**Figure 2**).

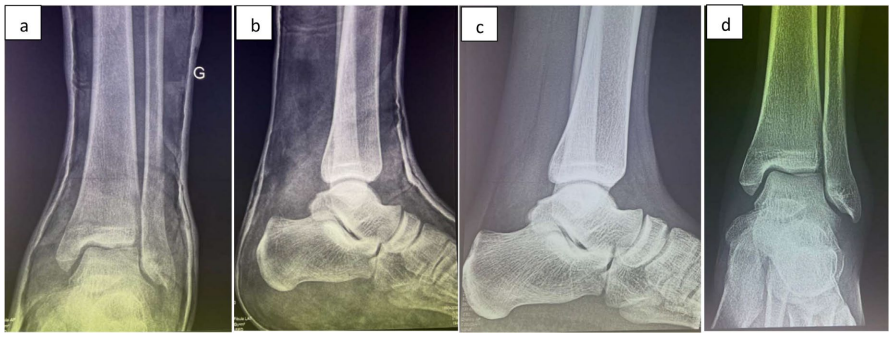

Figure 2. X-ray after reduction (a) (b) and at the last follow-up (c) (d).

The patient's informed consent was obtained.

Ethical and professional standards were respected.

3. Discussion

Medial subtalar dislocation is a rare injury. The pure form is even rarer. This is the first time this injury has been observed in our department. However, no exploration capable of assessing the extent of capsulo-ligamentous lesions has been performed. The short-term results were satisfactory, but do not predict the long-term results in terms of post-traumatic arthritic joint degeneration. This observation concerned an adolescent victim of low-energy trauma. The injury was diagnosed mainly by standard radiography and computed tomography. Close reduction was done and a cast immobilization for a short time. The radiological and functional results were satisfactory in the short term.

The rarity of this injury can be attributed to the strong ligaments connecting the talus to the calcaneus, the strong biomechanical properties of the ankle, and the tight joint capsule [10]. It commonly occurs following high-energy trauma [3] [11]-[13], such as a road traffic accident or a fall from a height [1]. The application of a violent reversing force to the forefoot, with the foot pinned to the ground, causes the talus to pivot on the sustentaculum tali, stressing the subtalar and talonavicular joints [14]; this leads to ligament ruptures in a precise chronological pattern: the dorsal talonavicular ligament first, then the two interosseous ligaments, and finally the calcaneofibular ligament [1].

In most cases, diagnosis is based on standard frontal and lateral radiographs of the ankle and foot [15]. Due to the frequent association of fractures of the malleoli, talus, or fifth metatarsal [1]; a CT scan should be performed for all subtalar dislocations, due to the lesional association in 60% of cases [16].

Treatment requires immediate reduction under sedation to avoid soft tissue and vascular complications [17]. Closed reduction is generally successful [18]

[19]. A 4-week cast immobilization reduces the risk of subtalar stiffness [5] [20]-[22]. Thus, the prognosis is essentially based on three parameters: immediate reduction, the energy of the trauma, and the duration of immobilization [3]. It is worse after a very violent mechanism [23]. Prolonged immobilization is correlated with high percentages of osteoarthritis and a decrease in function between 50% and 80% [24]-[26].

4. Conclusions

Pure medial subtalar dislocation is a rare injury that can occur in adolescents, following low-energy trauma. Its prompt treatment yields satisfactory radiological and functional results.

Additional investigations may be useful in identifying cartilage and soft tissue injury.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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