CASE REPORT

H. Kınık · O. Oktay · M. Arıkan · E. Mergen

Medial subtalar dislocation

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Abstract We report a medial subtalar dislocation without fracture in an eighteen year old male injured during basketball game. He was successfully treated with closed reduction and cast immobilization. At one year follow-up he was symptomless.

Résumé Nous rapportons une luxation sous-astragalienne interne sans fracture, survenue au cours d'un jeu de basket-ball chez un homme de 18 ans. Il a été traité avec succès par réduction fermée et immobilisation plâtrée. Au délais d'un an, il était asymptomatique.

Introduction

Subtalar dislocation or more correctly peritalar dislocation is the simultaneous dislocation of both the subtalar and talonavicular joints. This rare dislocation was first described by Judey and Dufaurets in 1811 [4]. Most subtalar dislocations were reported in young males with a male/female ratio of 6/1. Tibiotalar joint is undisturbed in these injuries. Dislocation was reported in any direction but mostly the medial form was seen (85%). In this injury, the foot and calcaneus is displaced medially, the head of talus is prominent dorsolaterally and the navicular is situated medially and sometimes dorsal to the talar head [1–4, 7, 9]. Less commonly lateral dislocation and rarely anterior or posterior dislocation associated to some degree with medial or lateral displacement was reported [3]. The medial dislocation has been referred to as an “acquired clubfoot,” while the lateral is described in the older literature as an “acquired flatfoot.” Distinction

between medial and lateral dislocation is important in terms of reduction and prognosis.

Case report

An 18-year-old male was brought to the emergency room with severe pain and deformity in his right ankle and foot. He was an amateur basketball player and during the game, after a fall on the ball, his foot went into strong inversion resulting deformity and pain. He was brought to the hospital 25 min after the injury. In his physical examination the foot was displaced medially and talus was prominent dorsolaterally. There was swelling to some degree and there was not any neurovascular compromise. His X-ray examination revealed medial subtalar dislocation without a fracture. The patient was moved to the operation room for closed reduction under general anesthesia. After the induction of anesthesia, the patient's knee was flexed for Achilles tendon relaxation. Longitudinal manual traction and inversion followed by eversion was applied. The dislocation was reduced with a snap. Postreduction X-rays reveal an anatomical reduction and no osteochondral fractures. Also a CT scan was done to rule out an occult fracture and was found negative. A one-week posterior plaster splint followed by a three-week short-leg cast immobilization was done. After this immobilization period, the patient followed a physical therapy program to regain subtalar motion. At one year follow-up, he had no arthritis, no pain when walking on uneven ground and had 28° range of motion in the subtalar joint measured by Inman and Mann method [2].

Discussion

Inversion or eversion forces acting on the foot, stresses all the joints but the strong calcaneonavicular ligament resists these forces. Therefore the weaker talonavicular and talocalcaneal ligaments are injured allowing displacement of the entire foot with an intact calcaneonavicular complex resulting in subtalar dislocation. In medial subtalar dislocations, the sustentaculum tali and in lateral dislocations the anterior process of the calcaneus acts as a fulcrum point [4].

Although Janssen and Kopta reported bilateral recurrent subtalar dislocation in a patient with Type VII Ehler-Danlos Syndrome [5]; the leading cause of these

H. Kınık¹ (✉) · O. Oktay · M. Arıkan · E. Mergen
Ankara University, Ibn-i Sina Hospital,
Department of Orthopaedics and Traumatology,
Ankara, Turkey
e-mail: kinik@pallas.dialup.ankara.edu.tr
Fax: +90-312-3112522

Mailing address:

¹ Mesa Koru Sitesi, Fulya Blok No: 44, Çayyolu 06530, Ankara, Turkey

Fig. 1 **a** Talus is clearly seen dislocated from talonavicular and talocalcaneal joints in the lateral projection. **b** AP view. The foot is displaced medially. **c,d** In lateral and AP views after reduction, alignment of both joints was restored

dislocations is high energy trauma. Also a significant number occur as a result of sport injuries. The term “basketball foot” was given by Grantham for medial subtalar dislocations, since five of his patients sustained this injury during the basketball game [3]. Our patient had also a “basketball foot”.

Associated osteochondral fractures of the talonavicular or talocalcaneal joints, fractures of both malleoli, the base of the fifth metatarsal, the cuboid and navicular bone has been reported with subtalar dislocations. These fractures were seen more frequently in lateral and open dislocations. Between 10% and 40% of these injuries are open [7]. In closed dislocations significant injury of the soft tissue is present, especially of the skin tented over the head of the talus. Zimmer and Johnson [8] summarized eight major series plus their experience and reported 79.5% medial, 17% lateral, 2.5% posterior and 1% anterior dislocations. Associated fractures were more frequently seen in lateral dislocations. They reported 25% open dislocations and 4–5% avascular necrosis. DeLee and Curtis [2] reported the results of seventeen patients involving 70% medial, 23% lateral and 5% anterior dislocations. Open dislocations were reported in 17% and associated fractures involving talocalcaneal and talonavicular joints in 47%.

Prompt and gentle reduction under general anesthesia is essential. In approximately 10–20% of medial and lateral subtalar dislocations, closed reduction is unsuccessful [4,6]. An impaction fracture of the talus and navicular, talonavicular joint capsule, the cruciate-crural liga-

ment and extensor digitorum brevis muscle were reported as obstacles preventing reduction in medial dislocations. Tibialis posterior muscle and impaction fractures were the most common causes of failed reduction in lateral subtalar dislocations. In such an instant immediate open reduction, and removal of the obstruction should be done.

The results of uncomplicated dislocations are reported to be good with some limitation of subtalar joint motion. The poor results were associated with open or lateral dislocations, infection, associated fractures, high energy injuries and failure to diagnose the dislocation promptly. Osteonecrosis has been reported very rarely after this injury.

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