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Isolated Medial Subtalar Dislocation in a Handball Player: Case Report and Review of the Literature

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Abstract **Case Report**

Medial subtalar dislocations following sport's trauma are infrequent and rarely reported in the literature. They have an excellent prognosis with early reduction. We report the observation of a pure subtalar dislocation closed in a young athlete of 28 years, occurring following a sports accident (handball) with medial displacement. The reduction was performed urgently under general anesthesia. Restraint with a cast boot was performed for six weeks, followed by rehabilitation. The functional results were excellent, with no signs of instability or osteoarthritis.

Keywords: Medial dislocation; Subtalar joint; Sport accident, Reduction.

INTRODUCTION

Subtalar dislocation is a loss of anatomical relationships between the talar, calcaneum and navicular bone. It represents 1% of all dislocations [1]. It is generally associated with osteochondral fractures or lesions of the soft tissues [2]. Pure acute medial subtalar dislocation without associated lesions is a rare entity, although it accounts for approximately 80% of all subtalar dislocations [3]. It most often follows a high-energy equine varus trauma, a fall from a height, a road accident or more rarely a sport's accident. In this case, the young athlete presented a closed pure medial subtalar dislocation without fracture associated with the initial radiograph. We will thus emphasize the importance of rapid closed reduction of the dislocation and early mobilization to ensure good functional results.

CASE REPORT

We report the case of a young male athlete, aged 28, with no notable pathological history, who presented to the emergency room following a sport's accident. He was the victim following a jump landing after a vertical leap in a handball match of a trauma to his left ankle, with a landing in inversion and equinism on his left ankle. The clinical study found an agitated patient, hemodynamically and respiratory stable and found pain with functional impairment of the left lower limb, deformation of the mid-tarsal region with edema of the ankle. The head of the talus was palpated on the dorsolateral side and the subtalar joint was dislocated medially. There was no skin opening. Dorsalis pedis and tibialis posterior pulses were present and there was no deficit in sensitivity or motor skills. Standard radiographs allowed the diagnosis of a pure medial subtalar dislocation (Figure 1 and 2). The reduction was performed under general anesthesia by maneuvering a boot jack, thanks to manual traction of the foot accompanied by counter-traction on the leg followed by eversion of the foot, and direct pressure on the head of the talus. The ankle was stable during testing. No residual subluxation persisted and a control X-ray (Figure 3 and 4) as well as CT-Scan (Figure 5 and 6) had shown good joint congruence. Then, the ankle was immobilized in a cast boot for 6 weeks without support, with a weekly follow-up without problem, followed by functional rehabilitation. The return to sport was authorized at 3 months and the functional result was excellent with a follow-up of 2 years, where no pain or signs of instability or osteoarthritis were noted.

Fig-1: Anteroposterior view of the subtalar medial dislocation of the left ankle

Fig-2: Lateral view of the subtalar medial dislocation of the left ankle

Fig-3: Anteroposterior view after closed reduction of the medial subtalar dislocation

Fig-4: Lateral view after closed reduction of the medial subtalar dislocation

Fig-5: Anteroposterior view of CT-Scan after closed reduction

Fig-6: Lateral view of CT-Scan after closed reduction

DISCUSSION

Pure subtalar dislocation is a rare condition, and is defined as a simultaneous dislocation of the talonavicular and talocalcaneal joints without a major fracture of the talus. Thus, the talus remains in place in the tibiofibular mortise, and the calcaneocuboid joint is intact. Young adults are the main group affected, and most often as a result of high energy mechanisms [4], such as falling from a high place or accidents on the public highway. However, in the published series, and as in our case presented, 15-18% of subtalar dislocations are due to low-energy trauma such as sports accidents [5]. Based on the position of the foot at the time of the accident, Broca described three types of subtalar dislocation in 1852: medial, lateral and posterior dislocation. Four years later, Malgaigne and Burger added the fourth type: the anterior dislocation [6] The internal variety is the most common feature since the greater instability of the foot in the inverted position. Chronologically, ligament rupture begins first with the dorsal talonavicular ligament, then it is the two bundles of the interosseous ligament which are

damaged and finally the fibulocalcaneal ligament [7]. The first line of management for such an injury is reduction under anesthesia, local or general, which must be done as quickly as possible to avoid injury to the soft tissue and possible avascular necrosis of the talus. The reduction maneuver is performed with a flexed knee, to relax the triceps sural, opposing traction and pressure to the injury mechanism. In most cases, reduction is achieved under sedation, in a closed manner. However, 12% of medial subtalar dislocations and 17% of lateral dislocations cannot be reduced closed [8]. The reason is most often for lateral subtalar dislocation, interposition of soft tissues like the posterior tibial tendon and flexor digitorum longus, and in medial dislocation, extensor retinaculum or bone incarceration such as impaction fracture of the talar head. Open reduction is necessary in these cases.

Immobilization should be immediate afterwards in a splint or cast boot. Post-reduction CT scan is recommended to detect probable associated joint fractures which may require longer immobilization and have a less favorable prognosis [9]. The recommended immobilization period after reduction is 3 to 5 weeks in isolated uncomplicated dislocations and 6 to 8 weeks in complicated cases. Rehabilitation should be started as soon as possible after immobilization with physiotherapy, strengthening, gait and balancing activities. The prognosis of these lesions is relatively good in most authors except in the event of skin opening or associated fracture [10]. The main complications can include arthritis, avascular necrosis of the talus, and joint stiffness. Residual pain as well as ankle instability can also be seen secondarily.

CONCLUSION

Isolated medial subtalar dislocations are exceptional in sport's practice. Their diagnosis is easy with the help of X-rays. To obtain excellent results, reduction should be immediate by external maneuvers if not incarceration to avoid causing osteochondral damage, followed by appropriate duration of immobilization and early rehabilitation. These are lesions with a good prognosis if no skin opening.

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