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Case Report

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Astragalo-Scapho Calcaneal Dislocation and Literature Review

Maxime Maton*, Frederic De Vuyst and Pierre- Yves Descamps

CHR Haute Senne, Orthopedics-Traumatology Department, Chaussée de Braine, Belgium

ABSTRACT

Introduction: The subtalar dislocations are rare, this is described as a dislocation of the talo-calcaneal and talo-navicular joints but the tibio-talar joint is intact. The diagnosis is easy and done with x-ray: antéro-posterior and lateral view. A emergency reduction is necessary In a few cases, you need a surgical approach if the dislocation is irreducible or no stable after reduction.

Case Report: A man aged of 19 years, felt in climbing, with a forced varus. In emergency room, the clinical exam showed a deformation and the x-ray: a talo-naviculo-calcaneal dislocation.

A reduction is done in the operative room, the testing a showed a stable ankle so we stabilized with a posterior splint. During the post-operative consultation: the control x-ray showed a good reduction and the CT: a minimal osteo-cartilagny tearing. The sport is authorized after three month.

Conclusion: The talo-naviculo-calcaneal dislocation is rare following a plantar flexion and inversion. A diagnosis is quickly and easily done and the reduction is done in the operative room under general anesthesia.

A cast is applied during some weeks before starting the physiotherapy. A surgical treatment is done in a few rare: irreducible – instable – open dislocation.

***Corresponding author**
Maxime Maton, CHR Haute Senne, Orthopedics-Traumatology Department, Chaussée de Braine, Belgium.

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Introduction

Subtalar dislocations account for a tiny proportion, 1%, of traumatic dislocations.

It is characterized by a loss of the astragalo-calcaneal and astragalo-navicular (or scaphoid) relationships, while the congruence of the tibio-astragalar mortise is always intact. Diagnosis is rapidly made with the aid of front and side x-rays, while CT scans can help identify osteo-cartilaginous lesions.

Reduction is performed under general anaesthetic and must be carried out as a matter of urgency. In some cases, a surgical approach may be required if the dislocation is irreducible or not stable after reduction.

Case Report

The patient was a 19-year-old man with no previous history of injury, who fell from a height of two meters while rock-climbing. A forced varus mechanism occurred when he landed between two mats.

On arrival at the emergency department with a visible deformity of the foot, an X-ray imaging study revealed an internal astragalo-scapho-calcaneal dislocation (CFR Figure 1).

He was taken to the operating room for reduction using a boot-pulling maneuver. In-room testing showed a stable ankle after reduction, and a plaster cast was immediately applied (CFR Figure 2).

He was seen three times in the first two weeks: radiologically, anatomical relationships were maintained, and the CT scan showed only minimal bone stripping at the ankle level (CFR Figure 3) and clinically, a stable ankle with significant oedema and phlyctenes, which regressed within two weeks (CFR Figure 4).

At one-month post-trauma (CFR Figure 5), we decided to remove the circular cast and put on a Rom-Walker boot, and to start physiotherapy sessions to combat subtalar stiffness. At three months, the ankle was still stable with good mobility recovered, and reinstatement of sport was envisaged in progressive stages over the following three months.

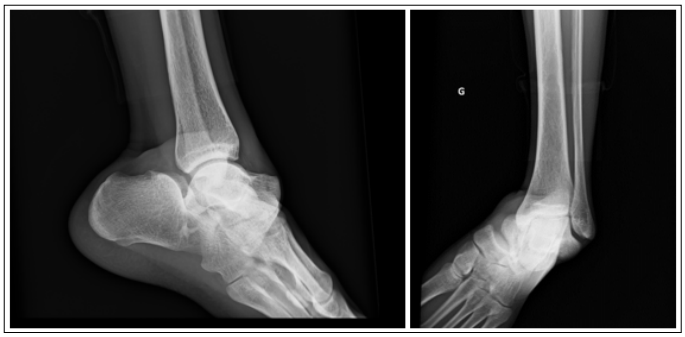

Figure 1: AP and Lateral Ankle Radiography

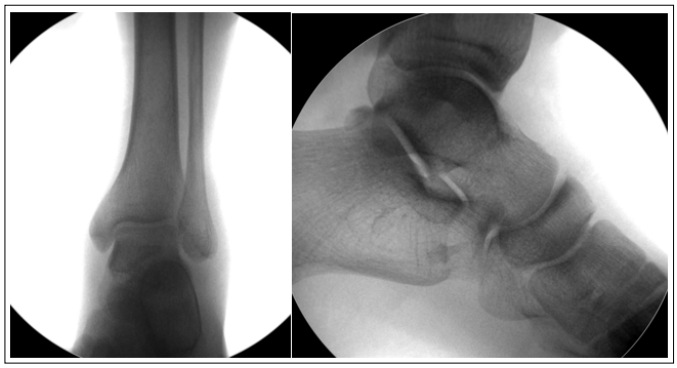

Figure 2: AP and Lateral Radiography after Reduction

Figure 3: CT scan 7 days after the Traumatism

Figure 4: Clinical Aspect after Two Weeks

Figure 5: Lateral X-Ray 32 Days after the Reduction

Discussion

Astragalo-scapho-calcaneal dislocation is a rare trauma, not only in proportion to other types of traumatic dislocation, but also in terms of trauma to the ankle alone [1].

The injury is described as occurring in the context of high-energy mechanisms, such as road accidents or sports injuries. Men are more affected than women, in a ratio of 3-4/1 [2,3].

Two types of subtalar dislocation are classically described: medial and lateral. In almost 80% of cases, the medial form is the most common, due to the greater displacement of the subtalar joint during inversion, which favours instability [4].

Watson-Jones describes three stages in foot inversion accidents: ankle dislocation as the first stage, subtalar dislocation as the second stage and enucleation of the talus as the third stage [5]. In addition to the bone congruence between the talus, navicular and calcaneus, there are multiple ligament injuries: the astragalo-scaphoid ligament, splitting of the anterior annular tarsal ligament and, finally, tearing of the peroneo-calcaneal bundle of the lateral collateral ligament. This is because the lateral ligaments (talocalcanean and peroneocalcanean) are weaker than those on the medial side (deltoid and medial talocalcanean).

The diagnosis is easy to make: the ankle is clearly deformed, with the foot locked in inversion.

X-rays are taken on arrival in the emergency department. The dislocation and loss of contact between the talus, navicular and calcaneus can easily be seen on front and side radiographs. The talus is held in the mortise.

A CT scan may be performed before or after reduction to identify associated osteo-cartilaginous lesions [6].

Treatment consists of emergency reduction, performed under general anaesthetic using a boot-pulling motion. A plaster cast is applied with the ankle in 90° dorsiflexion. To ensure ease of reduction, the patient should be positioned supine, with the knee bent at 90° to release the triceps, and the hands positioned one at the tibiotarsal level and the other applying the reduction maneuver.

According to Malgaigne's treatise, force can be applied to the head of the talus to facilitate entry into the articular sphere [7].

In certain situations, the dislocation is either unstable or irreducible (around 10%): various elements are involved: the talon-navicular capsule, the peroneal tendons or the posterior neurovascular bundle, or it is open, in which case pins are used to aid reduction

or fixation [2]. If hardware is used, fixation is maintained for six weeks. The prognosis is favorable if reduction is achieved rapidly, and the joint is stable. Rehabilitation begins as soon as the cast is removed, and sports can be resumed after three months. The long-term risk to be feared is subtalar osteoarthritis; the other fear is talar necrosis, but this is much rarer [4].

Conclusion

Medial astragalo-scapho-calcaneal dislocation is a rare injury, resulting from a mechanism of inversion and plantar flexion.

A rapid clinical diagnosis must be made, confirmed by front and side x-rays, in order to schedule a reduction under general anaesthesia as soon as possible.

After reduction, a plaster cast is applied for a few weeks before rehabilitation begins. X-rays and CT scans are performed at follow-up to check joint congruence and the absence of associated lesions.Surgical treatment is reserved for rare cases: irreducible, unstable or open dislocation.

References

1. De Palma L, Santucci A, Marinelli M, Borgogno E, Catalani A (2008) Clinical outcome of closed isolated subtalar dislocations. Arch Orthop Trauma Surg 128: 593 598.
2. Bibbo C, Anderson RB, Davis WH (2003) Injury characteristics and the clinical outcome of subtalar dislocations: a clinical and radiographic analysis of 25 cases. Foot Ankle Int 24: 158 163.
3. Perugia D, Basile A, Massoni C, Gumina S, Rossi F, et al. (2002) Conservative treatment of subtalar dislocations. Int Orthop 26: 56 60.
4. Jarde O, Trinquier-Lautard JL, Mertl P, Tran Van F, Vives P (1996) Les luxations sous-astragaliennes. A propos de 35 cas [Subtalar dislocations. Apropos of 35 cases]. Rev Chir Orthop Reparatrice Appar Mot 82: 42-48.
5. Watson-Jones R (1957) Fractures et luxations articulaires. Delachaux et Niestle Edition 922-945.
6. Rammelt S, Goronzy J (2015) Subtalar dislocations. Foot Ankle Clin 20: 253 264.
7. Malgaigne JF (1847) Traité des fractures et des luxations. Baillière 858.