

PURE SUBTALAR DISLOCATION: ABOUT A CASE

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ABSTRACT

Pure acute medial subtalar dislocation (STD), without associated lesion, is rare.^[1-3] It most often follows a high-energy equine varus trauma^[1], a fall from a height, a road accident or a sports accident.^[2,3] More generally, STD can occur in any direction, leading to associated lesions, the most common of which are skin pain and the occurrence of fractures (malleolar, talus or fifth metatarsal).^[1] We report the case of a patient, victim of pure traumatic STD and treated in our Facility.

KEYWORDS: Dislocation, subtalar, low kinetic.

INTRODUCTION

Pure subtalar dislocation is the displacement of the calcaneo-pedal assembly below the talus held in the tibiofibular mortise, without associated fracture. It is a rare lesion, 1% of all dislocations observed in trauma.

MATERIALS AND METHODS

study of the case of a patient admitted to the emergency department for post-traumatic subtalar dislocation.

PATIENT AND OBSERVATION

A 63-year-old patient, retired from the FAR, followed for hypertension was admitted to the emergency

department of the Mohamed 5 military instruction hospital in Rabat, on April 8, 2022 at 6 a.m. for low kinetic trauma to the right foot following (walking on uneven ground). The admission examination found a patient conscious and stable, suffering from functional impotence and pain in the right foot.

On inspection, a deformity of the foot, with normal skin condition, painful palpation and mobilization, no sensory-motor disorder and the pedal pulse was present (Fig. 1).



Figure 1: clinical images showing oedema with deformity of the right foot.

The patient is placed in a resuscitation room with monitoring.

An AP and lateral radiological assessment of the ankle allows the diagnosis of STD, in which the displacement of the calcaneopedial block is medial with no visible associated osteoarticular lesion (Fig. 2).



Figure 2: X-ray of the ankle and foot front and profile showing a medial subtalar dislocation.

Upon returning to the shock ward, orthopaedic treatment is decided on urgently. The traumatologist reduces this dislocation by gentle traction and refitting of the calcaneopedial block under the talus, thus correcting the deformity and allowing rapid protection of the skin (essential prognostic factor for these STD s). A clinical

test confirms the stability of the subtalar joint and the absence of vascular-nervous disorder. A posterior cast splint and radiological control are performed after reduction (Fig. 3.4). A circular cast was made at the orthopaedic consultation 72 hours after the trauma, allowing the skin condition to be checked.

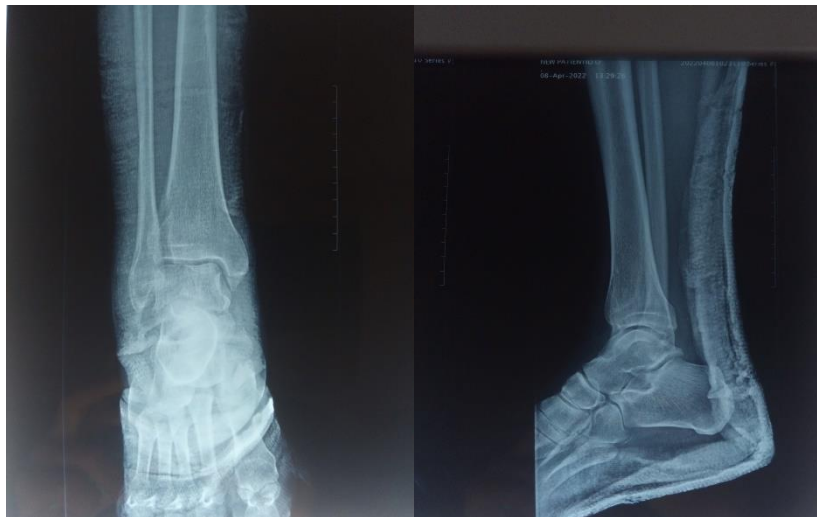


Figure 3: X-ray after reduction with posterior plaster splint.



Figure 4: CT 3D Reconstruction after Reduction.

DISCUSSION

STD is defined as simultaneous dislocation of the talonavicular and talocalcaneal joints without a major talus fracture.^[1,2,4-6] Thus, the embankment remains in place in The tibiofibular mortise and the calcaneocuboid joint is intact.^[7] Acute STD accounts for 1–2% of all joint dislocations and approximately 15% of peritalium injuries.^[3,7,8] They represent approximately 1% of all traumatic injuries of the foot.^[4] The sex ratio would be three to four times greater in men.^[2,3] The current classification system uses well-known definitions.^[3,9,10] With 80% of STD cases, the medial form is the most common.^[1,6,10] It is predominant, because the subtalar joint presents a large displacement in inversion favoring its instability.^[7] Moreover, it seems that the lateral passive stabilizers (talocalcaneal and calcaneofibular) are weaker than the medial ones (deltoid and medial talocalcaneal ligaments).^[2,3,10] A medial dislocation occurs when an inversion force is applied to the foot in forced dorsiflexion. The sustentaculum tali then acts as a pivot around which the talar neck pivots, thus causing dislocation of the talonavicular joint (rupture of the dorsal talonavicular ligament) followed by dislocation of the talocalcaneal joint (injury of the talocalcaneal interosseous and calcaneofibular ligament). The navicular bone then slides medially to the talus.^[7] Medial STD is usually the result of high-energy trauma (fall from a high place, car accident, sports accident).^[1-3,7]

In some athletes, this forced inversion mechanism on an already inverted foot is called “basketball foot”.^[1] More rarely have been described cases of STD for accidents with low kinetics.^[3]

These dislocations are frequently associated with lesions such as skin openings, fractures (talus: head, neck, posterior process of the talus; internal or external

malleolus; base of the fifth metatarsal) and neurovascular damage.^[2,4,10] Front, lateral and three-quarter ankle and foot X-rays assess the integrity of the tibiotalar joint, the presence of malleolar fractures and associated tarsal bones, which can modify the definitive therapeutic approach.^[4]

For Lancaster^[3], pure type I dislocations must be reduced urgently, using an appropriate analgesic procedure, in order to minimize the risks of skin necrosis^[6,7] with a view to the best possible functional result.^[3,4,6] Several methods of reduction by external maneuvers have been described.^[6,7] The technique commonly used requires analgesia or anesthesia in order to obtain optimum muscle relaxation and thus reduce damage to the articular surfaces during the manipulation. The ipsilateral knee is flexed to relax the gastrocnemius muscles. Firm longitudinal traction of the foot is applied with counter-traction on the leg initially combined with accentuation of the deformity.

This gesture is followed by a reversal of the deformation (eversion for the medial dislocation and inversion for the lateral dislocation). Direct digital pressure on the talus can help with reduction, which is accompanied by audible noise.^[1,6] Abrupt maneuvers, excessive force and multiple attempts at closed reduction should be avoided to avoid additional soft tissue damage.^[4] Once reduction is achieved, the neurovascular status and stability of the hindfoot and midfoot should be assessed.^[4,6] The initial immobilization is done in a posterior plaster splint stopping below the knee^[4] and which can be circularized secondarily. Efforts are made to confirm radiologically that the reduction of this dislocation is adequate. The immobilization period frequently found in the literature is four weeks^[2-4, 10,12], but there is controversy about the post-reduction immobilization time.^[4,13-15] In all cases, it seems that beyond six weeks of immobilization the

reduction in mobility of the subtalar joint is excessive according to Heppenstall *et al.*^[16] The collagen synthesis necessary for ligament reconstruction is six weeks. Protection taking into account this delay seems essential, but not beyond, which also makes it possible to prevent fibrosis of the subtalar and environmental joint.^[14] We can conclude that pure traumatic subtalar dislocations, rapidly reduced and immobilized for four weeks, have a favorable long-term evolution.^[10,12] A walking boot can be used for the next two weeks, allowing rehabilitation to begin.

A post-reduction ankle CT scan is recommended to identify occult fractures or other osteochondral lesions that may have gone unnoticed.^[2,3,7] These occult lesions are present in 39 to 88% of cases.^[4] In a second step, the ligament and soft tissue assessment can be carried out with magnetic resonance imaging, which is of no interest in an emergency. The future of these STDs is punctuated by four major complications: stiffness is the most frequent complication, osteoarthritis, avascular necrosis of the talus and instability of the subtalar joint.^[4,7,10,17] The functional results of these dislocations mainly refer to the specific hindfoot score of the American Orthopedic Foot and Ankle Society (AOFAS) from 0 to 100.

In conclusion, isolated acute traumatic STDs are rare lesions that readily occur as a result of high-energy trauma. Emergency management is required after a clinical, skin, neurovascular and radiological assessment in order to carry out an emergency reduction by external maneuvers. The pure isolated forms reduced rapidly under good conditions enjoy a better clinical and functional result.

CONCLUSION

Pure internal subtalar dislocation is a rare traumatological condition, its diagnosis is easy, treatment often consists of reduction by external maneuver under general anesthesia, except in cases of irreducibility by ligamentous incarceration or surgical reduction is necessary. These are lesions with a good prognosis except in cases associated with a skin opening.

REFERENCES

- Gantsos A, Giotis D, Giannoulis DK (2013) Conservative treatment of closed subtalar dislocation: a case report and 2 years follow-up. *Foot*, 23: 107–10.
- Rida-Allah B, Aitbenali H, Mahfoud M, *et al* (2015) Rare case of pure medial subtalar dislocation: conservative treatment and 32 months follow-up. *J Emerg Trauma Shock*, 8: 1745.
- Pesce D, Wethern J, Patel P (2011) Rare case of medial subtalar dislocation from a low-velocity mechanism. *Eur J Emerg Med*, 6: 121–4.
- Prada-Canizares A, Aunon-Martin I, Rico JV, *et al* (2016) Subtalar dislocation: management and prognosis for an uncommon orthopaedic condition. *Int Orthop*, 40: 999–1007.
- Gaba S, Kumar A, Triha V, Das S, *et al* (2017) Luxation postérieure de l'articulation sous-astragalienne sans fracture associée: rapport de cas et revue de la littérature. *J Clin Diagn Res.*, 11: 1–2.
- Ruhlmann F, Poujardieu C, Vernois J, *et al* (2017) Isolated acute traumatic subtalar dislocations: review of 13 cases at a mean follow-up of 6 years and literature review. *J Foot Ankle Surg*, 56: 201–7.
- DeLee JC, Curtis R (1982) Subtalar of the foot. *J Bone Joint Surg Am*, 64: 433–7.
- Krishnan KM, Sinha AK (2003) La vraie luxation postérieure de l'articulation sous-astragalienne : un cas. *J Foot Ankle Surg*, 42: 363–5.
- Pérouse D, Basile A, Terrence J, *et al* (2007) Dislocation sous-talienne antéromédiale. *J Foot Ankle Surg*, 46: 52–4.
- Inokuchi S, Hashimoto T, Usami N, *et al* (1996) Subtalar dislocation of the foot. *Foot*, 6: 168–74.
- Perugia D, Basile A, Massoni C, *et al* (2002) Conservative treatment of subtalar dislocation. *Int Orthop*, 26: 56–60.
- Giannoulis D, Papadopoulos VD, Lykissas GM, *et al* (2015) Luxation sous-talienne sans fracture associée: rapport de cas et revue de la littérature. *WJO*, 6: 374–9.
- McKeever FM (1963) Treatment of complications of fractures and dislocations of the talus. *Clin Orthop Relat Res.*, 30: 45–52.
- Buckingham WW Jr, LeFlore I (1973) Subtalar dislocation of the foot. *J Trauma*, 13: 753–765.
- De Palma L, Santucci A, Marinelli M, *et al* (2008) Clinical outcome of closed subtalar dislocations. *Arch Ortho Trauma Surg*, 128: 593–8.
- Heppenstall RB, Farahvar H, Balderston R, *et al* (1979) Subtalar dislocation with medial or lateral displacement. *Rev Chir Ortho Reparatrice Appar Mot*, 65: 377–85.
- Nkaoui M, Boufettal M, Sasbou Y, *et al* (2017) Luxation sous-talienne pure: à propos d'un cas. *PAMJ*, 27: 123.