

Fracture Dislocation of the Talar Body

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Abstract

Case Report

Fracture dislocation of the talar body is rare; it reaches articular congruence and determines the ankle's functional prognosis. The authors report a case of a fracture dislocation of the talus associated with a compression of the tendon flexor hallucis longus in a 22 years old patient. The mechanism, surgical treatment, complications and prognosis of this lesion will be discussed.

Keywords: Fracture dislocation, taller, Hawkins.

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INTRODUCTION

Talar fractures are rare and account for 0.3% of fractures. In 60% of cases, it is a fracture of the body of the talar [1]. The treatment of these complex lesions is difficult. The approach, blood reduction and osteosynthesis are also complicated. The evolution is unpredictable, burdened with complications dominated by aseptic necrosis and osteoarthritis.

OBSERVATION

A 30-year-old man has severe trauma to his right ankle in inversion-adduction and forced dorsiflexion, as described by Butel and Witvoët [5]. The trauma is indirect because there was no shock. The patient is admitted to the emergency department with a very deformed right ankle, painful and with total functional impotence. In addition, the clinical examination reveals signs of local neurovascular distress with the absence of posterior tibial pulse, ischemia of the right foot (white and purplish toes), and paresthesia in the territory of the terminal branches of the tibial nerve. Posterior and superficial fibular nerve under the tip of the lateral malleolus. X-rays of the face and profile (fig 1) performed in emergencies; seem to show a lateral dislocation of the midfoot with probably an associated fracture of the talus. A CT scan (fig 2) was performed that showed an talar-like talageal astralagic and subtalar tibio dislocated talar type III dislocation with dislocation of the posterior talar fragment posteriorly and within the medial malleolus that justified the vasculo-nervous disorder. The patient is quickly brought to the operating room and placed in

the supine position in order to achieve a reduction of the subtalar dislocation in emergency and under general anesthesia. The dislocation was irreducible and therefore the reduction was obtained in the open. Immediately after reduction, the toes return to a normal coloration and the posterior tibial pulse is again palpable. The quality and stability of the reduction are evaluated under fluoroscopy. Osteosynthesis is performed by two antero-medial and anterolateral approaches, with the aim of effectively controlling the rotation of the talar neck during the entire surgical procedure and to allow an anatomical reduction of the fracture 678. While preserving the vascularization of the talus by minimally de-staging, the anatomical reduction of the fracture is stabilized by means of two 1.6 mm Kirschner pins and then fixation by two 3.5 mm cortical screws (fig 3) in compression with an oblique trajectory.

Forward and backward and perpendicular to the initial fracture line. The screw head is buried to avoid its intra-articular overhang. The two incisions are closed in a conventional manner by intradermal surjets and the leg is immobilized in a resin boot maintaining the ankle flexion at 90 ° and dorsal windowed to allow dressing care. The patient is informed that he is not allowed walking for 6 weeks, until the removal of the cast, time from which he can begin the passive and active rehabilitation assisted and resistance mobilization exercises. Despite low specificity, Hawkins' sign is absent on control x-rays at 6 weeks. The patient is allowed to walk without restriction with normal shoes from the 10th week postoperatively. At

follow-up at 1 year, the ankle and foot mobilities are complete (90/100 at the AOFAS score) [9] and the

XRAY shows satisfactory bone consolidation (fig 4).



Fig-1: X-ray face and profil of right ankle showing fracture dislocation of the talar bone



Fig-2 : CT scan showing fracture dislocation type III of Hawkins classification

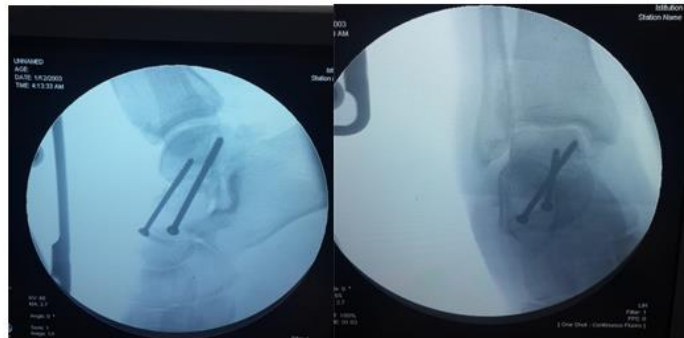


Fig-3: Postoperative Xray showing an osteosynthesis of the talus by two cortical screws



Fig-4 : follow-up at 1 year, showing osteosynthesis, bone healing of the cervical fracture, and absence of osteonecrosis of the talus

DISCUSSION

Fractures of the talus are rare and represent 0.3% of all fractures, they are often associated with fractures of the instep, including a malleolar fracture in 26% of cases [2, 4]. Astragalus fractures are most often caused by violent trauma in a traffic accident or a fall from a high place. Lesional mechanism was demonstrated by Butel and Witvoet [5] and Daniels *et al.* [6]. The fracture of the neck of the embankment is the result of a trauma in dorsal hyperflexion, exerted in front of the slope relative to a hindfoot locked under the tibiotalar. The fracture then occurs on the weakest part by a dorsal impaction of the cervix against the anterior rim of the tibia. Peterson [7] showed on a cadaver study that only the stop mechanism of the talus against the tibial pestle is insufficient to cause enucleation of its body backwards. Indeed, when there is an increase in the compression force of the dorsi-flexion of the foot, there will initially be a joint rupture of the interosseous and talocalcaneal ligament responsible for subtalar subluxation (resulting in calcaneo-pedal block in front) then in a second time a complete tear of the posterior ligament attachments of the ankle which will be responsible for an enucleation of the body of the slope which follows the fracture separation. The body of the talus is expelled, this fragment will usually undergo a double rotation around the deep bundle of the medial deltoid ligament, to which it remains at least partially attached. The dome of the embankment thus looks down and inside, the fracture surface looks up and out. There is also an irreducible flexion of the big toe due to the displacement of the hallux flexor by the fragment of the body dislocated backwards. The palpation of the retro malleolar gutter wakes up intense pain and often allows to feel under the skin the dislocated body fragment. In this type of fractures it is necessary to monitor the skin condition. Very often the posterior fragment lifts the skin on the internal side resulting in an open fracture. The risk of necrosis and secondary osteoarthritis is of course very important here. Vascular lesions may occur, involving the posterior tibial vascular pedicle, as well as traumatic or compressive involvement of the posterior tibial nerve. The orthopedic reduction of the type III dislocation fracture should always be attempted. It should be done as soon as possible in emergency, knowing that it is difficult and requires a dorsal flexion of the foot to allow the dislocated body to re-enter the bimalleolar forceps [8]. It is sometimes necessary to use a trans-calcaneal traction on an orthopedic table or a large femoral distractor fixed on the medial side of the tibia and the medial side of the calcaneus which allow to open up the talar corporeal fragment [9]. The use of dorsal flexion and forced eversion allows the body of the talus to be reduced in its box [10]. The reduction can always be done under trans-calcaneal traction using a Steinmann pin introduced into the body of the slope to allow the rotation and reintegration of the body of the slope in the manner of the manipulation of a joystick [11], Curvale [12] recommends a posteromedial approach to

decompress the posterior tibial pedicle as the case of our patient. The reduction of the astragalus fracture is performed in the open by an anterolateral route. Fortin [13] has shown that a reduction defect of 2 mm will be responsible for long-term osteoarthritis of the subtalar joint in 32% of cases. Post-traumatic aseptic necrosis of the talus is particularly common 61% for type III for Schuind. Among the adverse factors, the delay of the reduction as well as the imperfection of the initial reduction. Osteoarthritis is the result of anatomical defects, cartilaginous trauma and vascular disorders. It mainly affects the tibio-talar and subtalar: 1/3 of cases, and rare in the heel of the talonavicular. The rate of post-traumatic osteoarthritis is very variable in the literature ranging from 25 to 100% [14] [15, 16]. Cutaneous opening, fracture comminution, the importance of fracture displacement (HAWKINS and CANALE III, IV) and the occurrence of a malunion or osteonecrosis are factors of poor prognosis that may contribute to the onset of post-traumatic osteoarthritis.

CONCLUSION

Dislocation fracture of the talus body is rare; the association with compression of the long flexor tendon of the hallux is atypical. Rapid management with anatomical reduction and stable internal osteosynthesis of the talus fracture is the only guarantee of a good functional prognosis.

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