

Rare Case of Talus Enucleation Case Report and Literature Review

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DOI: [10.36347/SJMCR.2019.v07i10.005](https://doi.org/10.36347/SJMCR.2019.v07i10.005)

| Received: 18.09.2019 | Accepted: 25.09.2019 | Published: 29.10.2019

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Abstract

Case Report

Introduction: Total talus dislocation with loss of connection with the three joint facets is a rare injury and are fraught with a large number of complications, with a catastrophic prognosis and represents 2% of all talus lesions. A clinical case is presented herein, together with its clinical course and a review of the literature. **Clinical case:** A 20-year-old patient, falling from a height of 1 meter and a half on his heel, with the following mechanism: Forced inversion, resulting in firm trauma to the ankle with pain. A radiological assessment objective an enucleation of the talus with triple loss of relations. Patient admitted to the surgical block and an open reduction by antero-external incision is realized, the talus is just under the skin with interposition of the ligamentary bridles, tendons (extensor toes) and frondiform ligament, 2nd postero-internal incision for to approach the displaced fragment of the posterior tubercle and its osteosynthesis by screws and to complete with a plastered boot. **Results:** The patient did well and was immobilized initially with a plastered boot, The operative suites was simple. At the 4th week, partial support was allowed, and removal of the plaster performed at the 6th week. Total support was possible at week 12, with complete mobility, patient reviewed after one year without clinico-radiological signs of aseptic necrosis of the talus, or signs of arthrosis. **Conclusion:** Triple talus dislocation is a rare injury and its major complication is avascular necrosis and secondary arthrosis that could result in the need for panastragalodesis; the prognosis depends on the timeliness of care, it is a true emergency.

Keywords: Talus, enucleation, fracture, dislocation, necrosis, reduction.

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INTRODUCTION

The talus is located between the leg and the foot, therefore exposes to a significant traumatic risk. The relative rarity of talus fractures and dislocations should not obscure the significant arthrogenic risk of these lesions, aggravated by the frequency of post-traumatic aseptic necrosis, due to the precarious talus's vascularization [1].

The Watson-Jones-inspired Coltart classification, specified by Butel and Vitvoet, and adopted by American literature (Hawkins) [2], separates plot fractures and total fractures:

Parcel Fracture:

- Osteochondral fractures of the dome of the embankment
- Fractures of the head
- Fractures of later processes
- Other

Total Fracture:

- Fractures-separation (types 1,2,3)
- Comminuted Fractures

In our work we discuss a rare case of talus fracture separation type 3, which is a serious lesion whose prognosis is catastrophic. It is fortunately rare (2% of all talus lesions), that needs a fast and adequate treatment to avoid any complication.

CLINICAL CASE

A 20-year-old athlete, in jumping training session falls from a height of 2 meters on his heel, with the following mechanism: Forced inversion, resulting in firm trauma to the ankle with pain and total functional impotence. On examination we find a deformed ankle: ankle neck increases in size. At palpation we find the head of the talus under the skin and absence of neurovascular damage. A radiological assessment performed immediately, made of standard radiographs completed by a scan of the ankle with 3D reconstruction: objectifying an enucleation of the talus with triple loss of relations.



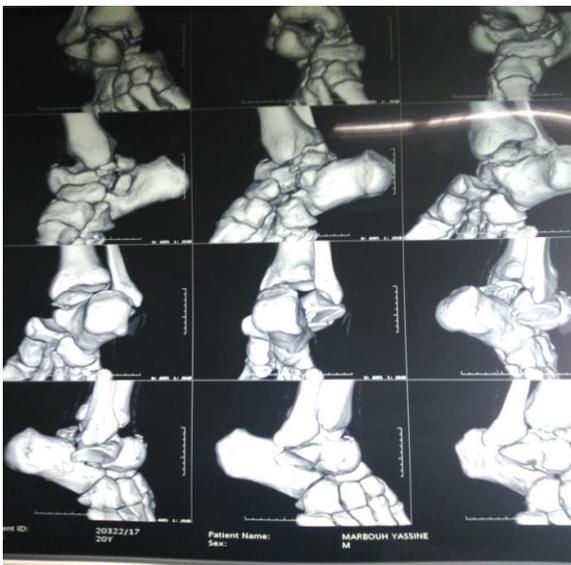
Standard radiography of the talus enucleation



Per Operative View



Standard Radiography 12 Weeks after the Surgery



Reconstruction 3D



TDM: sagittal view

Our patient is admitted through emergencies, he is sent directly to the surgical block, reduction was impossible, and an open reduction by antero-external incision is realized, the talus is just under the skin with interposition of the ligamentary bridles, tendons (extensor toes) and frondiform ligament, 2nd postero-internal incision needed to approach the displaced fragment of the posterior tubercle and its osteosynthesis by screws. The operation was completed with a plastered boot, the operation lasts 1h30min.

The operative suites were simple. At the 4th week, partial support was allowed, and removal of the plaster performed at the 6th week. Total support was possible at week 12, with complete mobility of the ankle (25 degree of dorsiflexion, 30 degree of extension, 12 degree of pronation and 45 degree of supination), patient reviewed at 24 weeks after finishing his remaining kinetherapie sessions , and he is allowed to retaking his training progressively.

One year after the accident, no clinico-radiological signs of aseptic necrosis of the talus, or arthrosis are objectified, and our patient is totally satisfied with the functional results.

DISCUSSION

Coltart [4] first gave a detailed description of talus dislocation fractures and refuted the previous vascular theories. Subsequently, many authors have studied the complex traumatic pathology of this bone and established the basis for its treatment.

Talus lesions account for 1% of all fractures. Although such fractures are rather rare, talus enucleation is even more unusual. Only about 30 cases have been reported. Most of these authors discuss only the antero-lateral dislocation [5].

Total talus dislocation with loss of connection with the three joint facets is a rare injury that occurs after a high energy trauma involving forced inversion or eversion forces with a plantar flexion component [6]. Concerning laterality, the anterolateral injury is more frequent due to the mechanism of injury. However, the pure anterior injury is very rare and it has not even been described in the literature, it involves a talus with a 90-degree turn on its own axis [7]. The foot appears very deformed, dislodged within. The talus is drawn under the skin, which is, moreover, most often open. In some cases the talus is expelled entirely by the cutaneous opening [8]. An emergency reduction can be proposed initially.

Closed reduction was timely, mainly to avoid skin necrosis due to compression, infection, which is one of the most frequently described complications, and avascular necrosis of the talus. The latter is inversely proportional to the time elapsed before receiving care. Closed reduction always done under general anesthesia is what several authors recommend in the literature [9, 10].

A review by Montoli [8] shows that Detenbeck and Kelly report the results of 9 cases of total talus dislocation treated at the Mayo Clinic. In 7/9 patients the injuries were open, the infection rate was 85%, and avascular necrosis occurred in all patients (7/7) with secondary arthrosis, which could progress to panastragalodesis. The prognosis depends on the time elapsed before reduction, and it is a true emergency.

Initially an emergency reduction which is usually very difficult, if not impossible, due to interposition of ligamentous, tendonous or bone fragments. A talectomy can be proposed, or secondarily to the necrosis, in case of disabling evolution a triple

arthrodesis (tibio-talo-naviculo-calcaneal), keeping the slope as an interposition graft.

CONCLUSION

Triple talus dislocation is a rare injury and. The most typical form is the anterolateral variety, with the following mechanism: forced eversion, the destruction of lower ligament attachments, rupture of the collateral ligaments, lateral and medial with complete rupture of all the vascular contributions bone and a theoretical certainty of evolution towards the osteonecrosis [3, 7].

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