

## Pure and Insulated External Luxation of Astragalus: Case Report

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### Case Report

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**Abstract:**Enucleations of the talus are rare and serious traumatic lesions. They are of poor functional prognosis since they are complicated, in the majority of the cases, of osteonecrosis of the slope. We report a case of anterolateral enucleation of the right talus without cutaneous lesion in a 40 year old adult, following a domestic accident, by indirect mechanism. The patient has benefited from an open reduction with capsulo-ligament repair. The astragalus been stabilized by three pins. At a follow-up of 6 months, the right ankle was painless, stable and has satisfactory mobility: 10° of dorsal flexion and 30° of plantar flexion. Standard radiography showed a moderate narrowing of the anterior talo-crural joint space and the posterior subtalar joint.

**Keywords:** Enucleation, Astragalus, Vascular necrosis.

### INTRODUCTION

The enucleation of the talus is a rare but it's the most serious traumatic lesion of the posterior tarsus [1, 2], representing in the literature 2 to 10% of talian traumas [3, 4]. The astragalus loses all its connections with the tibia, the scaphoid and the calcaneus; the vascularization is totally interrupted.

The rarity of this lesion explains why published studies aren't numerous and relate to a relatively small number of cases, in fact, less than 80 cases of pure enucleation of the talus have been reported in the literature [5], three-quarters of them are open [3]. The treatment of this lesion is far from being univocal; it has been a long time radical by astragalectomy which is currently abandoned in favor of the conservative treatment.

In our work, we report the case of a pure and isolated total enucleation of astragalus without other associated lesions in the orthopedic surgery department of the UAV-Avicenna in Rabat. Thus the object of our study will be to compare the result we have obtained with those of literature.

### CASE REPORT

This is a 40-year-old computer scientist with no particular antecedent who was admitted to the emergency for closed trauma of the right ankle after falling from a height of approximately 2 meters. By doing housework, with reception on the heel foot in eversion, causing an audible crunch, deformation, excruciating pain and total functional impotence of the right ankle.

The clinical examination finds a deformed ankle with no cutaneous lesion, on palpation it is possible to perceive a subcutaneous bone fragment on the external face of the right ankle, with pedis and posterior tibial pulses well perceived and a time of recoloration lower than 3 seconds and without nervous

deficit. (Figure 1) Standard radiography shows complete external dislocation of the astragalus (Figure 2).

The CT confirms the dislocation and shows no fractures or other associated lesions (Figure 3). After failure of reduction by external maneuvering, an open reduction was achieved by first anterolateral approach before a fixation by 3 large caliber pins with the adjacent bone structures followed by an immobilization by plastered splint at 90 degrees which was replaced on day 5 by a plastered boot after subsidence of the edema (Figure 4).

The evolution was marked by a stabilization of the reduction with satisfactory control radiographs on day 1, day 15, day 30 and day 60. Plaster and pin removal was performed at day 60. Reeduaction started after removal of the pins.

Back to 6 months, support and painless walking, stable ankle, articular amplitude at 10 degrees of dorsal flexion and 30 degrees of plantar flexion, on

radiography there are no signs of osteonecrosis of the astragalus(Figure 5).



**Fig-1: Pre-operative aspect of the right ankle**



**Fig-2: Radiographs of the right ankle**



**Fig-3: CT-scan of right ankle**



**Fig-4: Post-operative radiographs of the right ankle**



**Fig-5: Radiographs of the right ankle after removal of the pins**

## DISCUSSION

The situation of the astragalus in the center of a true articular junction, its primary role in the stability of the foot, and its precarious vascularization are elements that allow appreciating the severity of this lesion.

Cutaneous necrosis remains the most frequent early complication and the prognosis of this type of lesion is dominated by vascular necrosis of the talus bone, osteoarthritis and instability of the ankle [2].

As a result, the challenge of pure enucleation is maximum preservation of vascularity by rapidly and perfectly reduction of the dislocation.

Secondary skin necrosis may follow closed enucleation with tense skin and may be a failure of conservative treatment. She exposes to infection. Once it occurs, it requires excision and directed healing.

The precocity of the treatment is essential, because it is necessary to try by a rapid reduction allowing the recanalization of the stretched vessels, thus the risk of necrosis could be reduced.

The reduction should be as anatomical as possible. It will have to restore the morphology of the astragalus and the articular congruence by not letting any displacement remain. In the majority of cases, the reduction is obtained only by bloody reduction.

The anterolateral approach are the most used according to BENZAKOURT T [6], they use the free spaces between the tendons. The 6 centimeters incision is a finger cross above the tip of the malleolus and descends into the pre-malleolar fossa, parallel to the anterior peroneal tendon and 1 centimeter apart from it. The capsule is incised in front of the external malleolus; this incision gives an excellent view.

Vascular necrosis of the talus bone is the most common and most dangerous complication of total enucleations of astragalus. For the majority of authors, it is inescapable [7-11] the frequency varies from 50 to 100%, the values being much closer to the last digit. According [9] it's 50%; according [2] it's 80%; according [11] it's 80%; according [10] it's 91%; according [12] it's 100%.

Osteoarthritis of the ankle is a less common complication than the previous one. It occurs in 8.9% of

total enucleation cases [7]. It affects mainly the subtalar joint and the tibiotarsal joint, but often it is small and multi-articular. Instability of the ankle is uncommon complication, occurs when patient is not exposed to osteonecrosis and osteoarthritis.

#### CONCLUSION

Total antero-lateral closed enucleation of the talus is exceptional and only a few cases have been reported in the literature. An open reduction is necessary in case of failure of the closed reduction. Once the Talus is reduced, the lateral approach offers the advantage of capsular-ligamentary structures repair. The functional outcome is unpredictable and mainly depends on the occurrence of avascular necrosis.

#### CONSENT

The patient has given their informed consent for the case to be published.

#### COMPETING INTERESTS

The authors declare no competing interest.

#### AUTHORS' CONTRIBUTIONS

All authors have read and agreed to the final version of this manuscript and have equally contributed to its content and to the management of the manuscript.

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