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Clinical case

Anterior enucleation of a talus with «triple loss of relations». Case report and literature review

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ABSTRACT. ***Introduction:*** **When the talus loses its triple connection with the ankle mortise, a rare injury occurs in 3-4% of the ankle dislocations; 75% of the injuries are open. A clinical case is presented herein, together with its clinical course and a review of the literature.** ***Clinical case:*** **The case of a male, 52 year-old patient with a left ankle inversion and extension injury is presented. At the time of admission to the emergency room he had triple closed anterior dislocation of the talus. Closed reduction was performed under anesthesia, an acrylic boot was placed and he was followed-up at the outpatient service.** ***Results:*** **The patient did well and was immobilized initially with an acrylic foot-thigh brace for six weeks; he then wore an acrylic suropodalic brace for 4 weeks and started partial weight bearing with crutches at 10 weeks; total weight bearing with crutches at 12 weeks, and without crutches at 16 weeks. Shortly before this a bone scan was performed and no signs of avascular necrosis were found.** ***Conclusions:*** **Triple talar 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.**

Key words: astragalus, foot, dislocation, arthrosis, ankle, necrosis.

RESUMEN. ***Introducción:*** **El astrágalo cuando pierde su triple conexión con la mortaja presenta una lesión rara y sucede en 3-4% de las luxaciones del tobillo y el 75% de las lesiones son abiertas. Se presenta la experiencia de un caso la evolución clínica y revisión de la literatura.** ***Caso clínico:*** **Se presenta un paciente masculino de 52 años de edad con lesión en tobillo izquierdo por inversión y extensión, al momento de su ingreso a urgencias presentó luxación anterior cerrada triple del astrágalo, se realizó reducción cerrada bajo anestesia, colocando bota de acrílico y continuando su evolución en consulta.** ***Resultados:*** **La evolución fue satisfactoria se inmovilizó en un inicio con aparato de acrílico muslopodálica durante 6 semanas, posteriormente 4 semanas más con aparato de acrílico suropodálica e inicio al apoyo parcial con muletas a las 10 semanas, a las 12 semanas con apoyo total con muletas, apoyando sin muletas a las 16 semanas poco antes se realizó gammagrafía ósea sin datos de necrosis avascular.** ***Conclusiones:*** **La triple luxación del astrágalo es una lesión rara y su principal complicación es la necrosis avascular y artrosis secundaria que puede terminar en panastragalodesis, el pronóstico depende del tiempo de atención, siendo una verdadera urgencia..**

Palabras clave: astrágalo, pie, tobillo, luxación, artrosis, necrosis.

Level of evidence: V (Act Ortop Mex, 2010)

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Introduction

Total or complete dislocation of the talus losing the connection with its three joints is a rare injury in which the talus is dislocated outside of the ankle mortise, as well as of the subtalar and talonavicular joints; it has also been called talar enucleation when it involves loss if its triple articular connection. According to several authors, total talus dislocation is the result of the continuation of the forces that produce the subtalar dislocation. Thus, a medial total dislocation is a pronation injury and a lateral total dislocation is a supination injury.[1,2]

The position of the talus indicates whether the force that caused the injury is an inversion or an eversion force. The lateral total dislocation of the talus is more frequent than the medial one, since the inversion injuries are more frequent than those caused by eversion. According to the literature, they occur in 75% of open dislocations in which the talus remains extruded. Concerning treatment, whether open or closed, a total dislocation of the talus represents a medical emergency. In closed dislocations general anesthesia is used under plantar flexion, with adduction or abduction, depending on each case, whether it is lateral or medial, respectively, and the talus is put back into place under the mortise. Immobilization with a cast is applied and weight bearing is avoided for 4-6 weeks, even at risk of avascular necrosis of the talus.[3,4] In case of an open dislocation, an incision is made directly on the displaced bone exposing the talus, and then enough distraction of the tibia and calcaneous is performed, and the talus is manipulated until it reaches its normal position. Immobilization with a cast is also applied. The complications include a 75% infection rate in the open total dislocations of the talus. Avascular necrosis is reported in up to 50%, and post-traumatic arthrosis is a sequela which is treated according to the patient's clinical condition.

The purpose of this study is to present the experience of one case of anterior talus enucleation with its clinical course until recovery and to review the literature, as it is an infrequent case.

Clinical case

Male, 52 year-old patient with a left ankle injury due to forced inversion and extension when trying to turn on his own axis on a slope. He was seen at the Médica Sur Hospital Emergency Department two hours later when he presented with severe pain and deformity of the anterior region of the left ankle and was unable to move it *(Figure 1)*.

AP and lateral X-rays were taken and the diagnosis of closed anterior total dislocation of the talus of the left ankle was made *(Figures 2 and 3)*. The patient had no remarkable history and closed reduction was performed under general anesthesia; an acrylic foot-thigh brace was put in place under neutral position of the foot, with the knee flexed at 30 degrees, and he was followed-up at the outpatient service. Weight bearing was forbidden for 6 weeks and then he wore an acrylic suropodalic brace with partial weight bearing and crutches until week 10. Then the brace was removed and he started active motion and partial weight bearing with crutches; as of week 12 complete weight bearing of the involved extremity was allowed and a bone scan was performed at week 16.

Results

The reduction was performed at the emergency service under general anesthesia two and a half hours after the injury; the patient did well during the first immobilization

Figure 1. Clinical picture of the left ankle upon admission to the emergency room.

Figure 2. Lateral view of the ankle with talus enucleation.

up to week 6 and at no time had signs of skin lesions or necrosis due to compression. He initially had edema and mild pain that subsided by elevating the extremity; he then wore an acrylic suropodalic brace for 4 weeks and started partial weight bearing with crutches at week 10 *(Figure 4)*. The patient had limitation of mobility in the plantar flexion ranges from 0 to 20 degrees, in extension from 0 to 10 degrees, in inversion from 0 to 10 degrees and in eversion from 0 to 10 degrees, and continuous edema. By week 12 he was under total weight bearing with crutches and had residual edema with an increased plantar mobility in flexion from 0 to 40 degrees, in extension from 0 to 20 degrees, in inversion from 0 to 20 degrees, and in eversion from 0 to 15 degrees. By week 16 he had full weight bearing without crutches and achieved plantar mobility in flexion of 0 to 45 degrees, in extension from 0 to 30 degrees, in inversion from 0 to 30 degrees, and in eversion from 0 to 20 degrees. More than edema, he had thickening of the left ankle soft tissues, with a circumference of 30 cm, compared with 24 cm in the non-affected side. A bone scan was performed at week 24 and no signs of avascular necrosis were reported. At week 30 he continued to have ankle edema, the same mobility and no pain.

Figure 3. AP view with lateral talus dislocation.

Conclusion

Total talus dislocation with loss of connection with the three joint facets is an infrequent injury that occurs after a high energy trauma involving forced inversion or eversion forces with a plantar flexion component. This case had forced plantar flexion and inversion as well as medial rotation. The incidence rate of closed dislocation is 25%, with open dislocation being more frequent. 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. 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.[5,6] A review by Montoli 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% (6/7), 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.

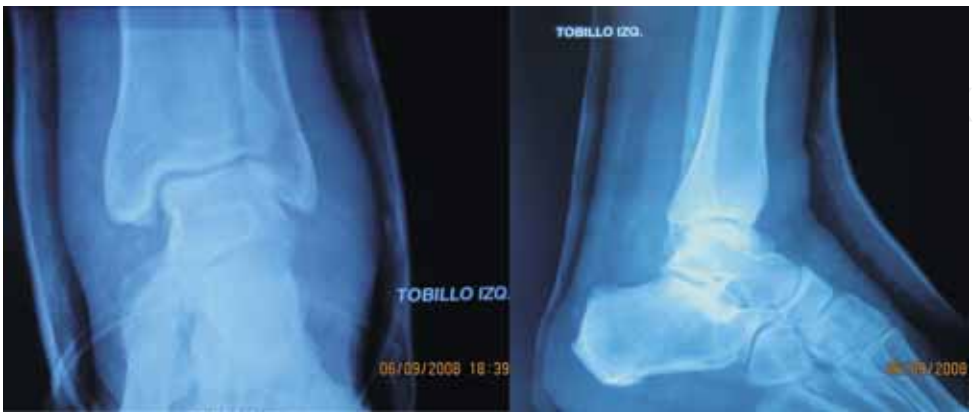

Figure 4. AP and lateral view after reduction and with the acrylic brace.

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