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The emergency and delay management in total talus extrusion: Case report and review of literature after 24 months of follow up

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ABSTRACT

Total talus extrusion is a rare and severe injury. It is burdened by many complications as avascular necrosis and osteomyelitis even if a proper debridement of extruded talus is performed. Few case reports or case series were published, and because of the rarity of this event, there are no guidelines for treatment. We report the first case on an octogenarian man providing a long-term follow-up performing contrast enhanced magnetic resonances. The authors report the case of an octogenarian man who fell from an olive tree reporting a total talus extrusion associated with the fracture of the medial malleolus. After an accurate debridement and washing of the wound, the talus was anatomically repositioned and the fracture was treated with an external fixator. The wound healed with difficulty after 12 months and the patient developed a chronic osteomyelitis of the talar dome and avascular necrosis of talar head. We followed the patient for 24 months performing contrast enhanced magnetic resonances and evaluating the development of the avascular necrosis. Even if we encountered these complications, the treatment allowed the patient to walk without pain, using a talus type shoe and one crutch. Although the literature suggests that an anatomic replacement of talus allows avoiding main complications, we deem that the patient's age is an important biological feature to consider in the prognostic stratification. Moreover, primary talectomy and tibio-calcaneal fusion should be reserved as a salvage procedure. Talus replacement allows an overall good outcome for the patients, retaining height, and allowing a good quality of life.

1. Introduction

Total talus extrusion is a rare but severe injury. It is often associated with fractures and damage of adjacent soft tissues. There are few cases reported in literature and the incidence is about 0.6% of all talus fractures[1,2]. Talus dislocation is open in the 70% of cases[1], and is usually caused by a high energy trauma. Talar extrusion is the result of a combined movement of tibio-talar dorsiflexion and excessive subtalar supination or pronation[2–4]. The extrusion is often associated with loss of vascular supply and contamination of the wound that can lead to severe complications. The most common complications are osteomyelitis and avascular necrosis (AVN) even if the talus is replaced after a proper debridement of both the wound and the extruded talus[1,5]. Because of the rareness of this lesion, there are no guidelines for the treatment and the follow-up[2,3]. We present the case of an 80-year-old man referred to our Emergency Department with a total talus extrusion, associated with the fracture of the medial malleolus, treated with an external fixator and screws and with a long-term follow-up.

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2. Case report

An 80-year-old male patient referred to our Emergency Department because of an accidental fall from an olive tree. He reported a trauma, describing a tibiotalar dorsiflexion and subtalar supination. The physical examination showed a 7 cm wound of the medial region of the ankle, with total talus extrusion (Figure 1). The mobility of the toes was preserved and

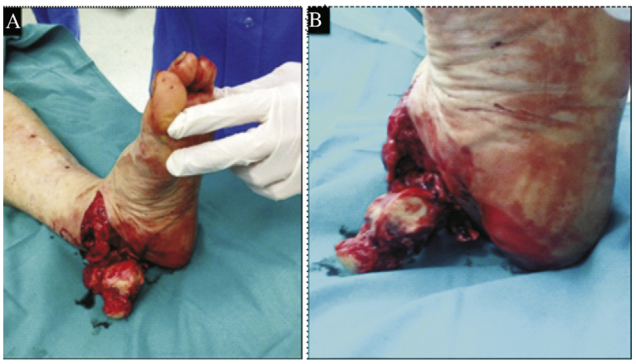

Figure 1. Clinical appearance at the time of presentation to the emergency department.
A: Note the wide wound of the medial region of the ankle, with open total talus extrusion; B: Zoomed image showing the subtalar joint surface.

the sensory examination was normal. The pulse of the pedis arteria was weak while posterior tibial artery was present. X-rays of the ankle showed the fracture of the medial malleolus (Figure 2).

Figure 2. Radiographs of the left ankle.
A: Loss of articular mortar between the tibial-fibular joint with talus; B: Extruded talus and the fracture of the tibial medial malleolus.

The patient received tetanus prophylaxis prior to surgery in the General Emergency Department, then he was immediately transferred to the operating room, where he received broad-spectrum antibiotic prophylaxis. After the spinal block, we washed the wound and the talus using 10000 mL of saline solution, and an accurate debridement of the bone were performed[6]. Then the talus was anatomically repositioned. The procedure also revealed a tendon lesion few millimeters distally to the myotendinous junction of longus flexor digitorum, in which we attempted to suture. Thereafter, we performed the reduction of the medial malleolus, its osteosynthesis with two screws (4 × 40 mm Asnis III Cannulated Screws, Stryker®, Kalamazoo, MI, USA) and the reconstruction of medial flexor, deltoid ligament and flexor retinaculum, that were all torn. We completed the procedure suturing the subcutaneous tissue and the skin that were strained due to the tissues loss during the injury. Stabilization of the ankle was performed with a spanning ankle external fixator in the neutral position (Figure 3). We scheduled a

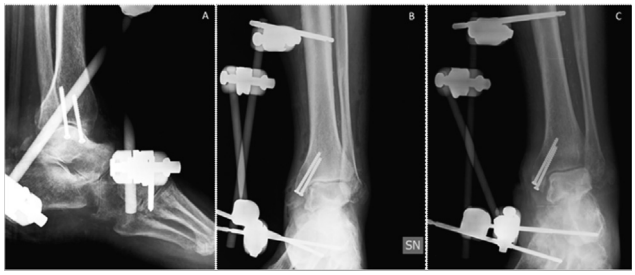

Figure 3. Lateral (A), anterior posterior (B) and oblique (C) postoperative radiographs after stabilization of the ankle with a spanning ankle external fixator.
Medial malleolar reduction and osteosynthesis with two screws.

broad-spectrum antibiotic therapy, with gentamicin and teicoplanin for 3 days, to cover the wide range of bacteria that could involve an open fracture, preventing the infection of the joint[7].

During the hospitalization the patient has undergone consulting by infectious disease specialists who recommended two broad-spectrum antibiotic therapy, given the high rate of contamination of the injury. Three days after surgery, the patient was discharged, providing a therapy with amoxicillin–clavulanic acid (875 mg + 125 mg bid *per os*) and levofloxacin (500 mg/day *per os*) for 10 days and recommending wound medication every 2 days.

Eight weeks after surgery, the external fixator was removed and X-ray of the left ankle was performed showing no signs of avascular necrosis of the talus (but Hawkins sign was not evident) (Figure 4)[8]. Patient started walking using Lofstrand

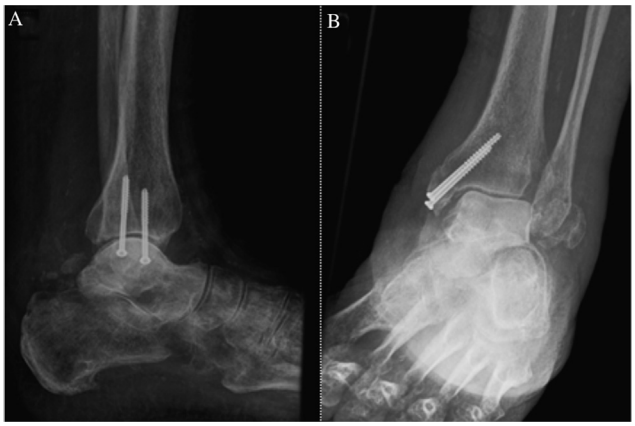

Figure 4. Lateral (A) and anterior posterior (B) radiographs of the ankle after removing the spanning ankle external fixator.

crutches and a talus type shoe. Five months after surgery the wound was not yet completely healed (Figure 5), so a

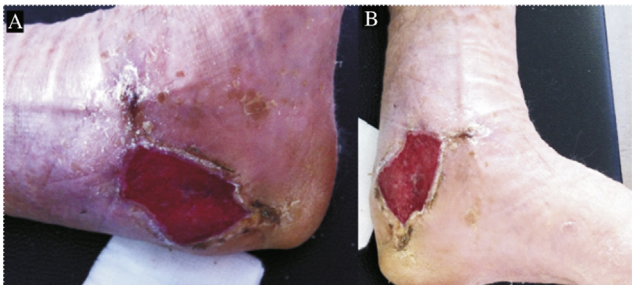

Figure 5. Medial views of the wound 5 months after the procedure (A, B), showing the wound was not completely healed.

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