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(CASE REPORT)

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Pure and open tibiotalar dislocation: A case report and literature review

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Abstract

Pure tibio-talar dislocation is a very rare injury, often caused by high-energy trauma.

We report an exceptional case of a pure postero-medial open tibio-talar dislocation in a 41-year-old female patient following a fall. Reduction followed by debridement and immobilization with a cast for six weeks was performed.

After eighteen months of follow-up, the functional outcomes were satisfactory.

Keywords: Tibiotalar dislocation; Pure; Reduction; Immobilization

1. Introduction

Pure tibiotalar dislocation is an extremely rare condition that typically results from high-velocity trauma. Although it accounts for less than 1% of ankle dislocations, this injury can lead to serious consequences if not managed promptly and appropriately [1]. Due to its rarity and the severity of associated injuries, the treatment of pure tibiotalar dislocation requires immediate reduction of the joint to restore articular congruence and prevent severe long-term complications. This work presents a clinical case of a pure open postero-medial tibiotalar dislocation.

2. Case Report

A 41-year-old female patient, with type 2 diabetes managed with oral antidiabetic medications (OADs), was admitted to the emergency department after a fall down the stairs. She complained of severe pain and complete functional impairment of the right lower limb.

On clinical examination, an obvious deformity of the right ankle was observed, accompanied by an open wound classified as type 2 according to the Couchoix and Duparc classification (Figure 1), with no vascular or neurological deficits. No signs of generalized ligamentous laxity were noted, although a history of recurrent ankle sprains was reported.

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Figure 1 Clinical image

The radiographs revealed a pure postero-medial tibiotalar dislocation, with no associated malleolar fracture (Figure 2). No other type of bone injury was observed. Due to the open wound, an urgent reduction under general anesthesia was performed, along with debridement and irrigation of the wound, as well as 48-hour antibiotic prophylaxis.

Figure 2 Anteroposterior and 3/4 radiographs of the ankle showing a postero-medial tibio-talar dislocation

The post-reduction radiograph showed good articular congruence (Figure 3). A cast was applied for a period of six weeks, followed by functional rehabilitation. A computed tomography (CT) scan was performed after reduction to assess potential bone injuries, and the results were normal. After cast removal, the clinical examination revealed no laxity. Eighteen months after the injury, the patient had a stable, pain-free ankle with satisfactory range of motion.

Figure 3 Post-reduction anteroposterior and lateral radiographs of the ankle

3. Discussion

Pure tibiotalar dislocation, without an associated malleolar fracture, is a rare injury that often occurs in the context of high-energy trauma. The mechanism typically involves forced plantar flexion and inversion of the foot, combined with significant axial loading. Approximately 50% of cases are accompanied by an open wound, which complicates initial management [1, 2].

Several factors can predispose to this type of dislocation. Ligamentous hyperlaxity, peroneal muscle weakness, hypoplasia of the medial malleolus, and insufficient coverage of the talus are factors that can make the joint more vulnerable to such injuries. Although our patient did not exhibit generalized ligamentous laxity, her diabetes and history of ankle sprains may have contributed to the occurrence of this dislocation [3].

The treatment of pure tibiotalar dislocation requires prompt and effective reduction under general anesthesia. Once reduction is achieved, immobilization with a cast is typically maintained for 6 to 8 weeks. This helps restore articular congruence and prevents complications such as chronic instability and tibiotalar osteoarthritis [1]. In cases of open dislocation, wound irrigation and 48-hour antibiotic prophylaxis are recommended to prevent infections [4]. Imaging, particularly computed tomography (CT), may be performed to assess potential bone injuries, although associated lesions are rare in most cases.

Functional outcomes are generally satisfactory, with minimal loss of range of motion, and the majority of patients can achieve a stable and pain-free ankle following proper reduction [5, 6]. However, complications such as chronic ankle instability, ectopic calcifications, or post-traumatic osteoarthritis may occur in the years following the injury [7]. This highlights the importance of thorough functional rehabilitation and regular clinical follow-up.

Recent studies have also addressed the issue of ligament repair in open dislocations. While some authors recommend this approach to improve long-term joint stability, others believe that in cases of pure dislocation, reduction and immobilization are generally sufficient to achieve good functional outcomes [6, 7].

4. Conclusion

Pure tibiotalar dislocation is a rare and serious injury, often caused by high-energy trauma. Early and appropriate management is crucial to avoid complications and improve long-term functional outcomes. Reduction under general anesthesia, followed by immobilization and functional rehabilitation, remains the treatment of choice.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflicts of interest.

Statement of informed consent

Informed consent was obtained from the patient for publication of this case report and accompanying images.

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