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Pure Tibiotalar Dislocation: A Case Report and Literature Review

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ABSTRACT

Background: Pure tibiotalar dislocation is an extremely rare injury, caused by high-velocity trauma.
Case Presentation: This case discusses a 26-year-old patient who sustained a tibiotalar dislocation following a sports-related accident.
Conclusion: Pure tibiotalar dislocation is a very rare injury, often caused by violent trauma, and prompt, adequate emergency management is the key to a good long-term outcome.
Keywords: Tibiotalar dislocation, ankle, sports injury, traumatology
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MAIN ARTICLE

Introduction:

Pure tibiotalar dislocation without associated malleolar fractures is an extremely rare traumatic injury due to the inherent stability of this joint, which is provided by the articular capsule and its robust ligamentous complex. It occurs exclusively following violent, high-energy trauma. Here, we present a case of a posterior-medial pure tibiotalar dislocation in a 26-year-old patient, resulting from an ankle trauma during a football match, along with a review of the literature and therapeutic management options.

Case report:

It's a 26-year-old athlete with no significant medical history, who was admitted to the emergency department after sustaining an ankle injury during a football match. The patient reported intense pain and complete functional impairment of the left lower limb. The initial examination revealed deformity of the ankle, severe tenderness on palpation, and pain with any attempt at mobilization, without any vascular or neurological deficits, or skin injury. The general examination did not reveal any generalized ligamentous laxity that might predispose to this type of injury. Radiographs confirmed a posterior-medial tibiotalar dislocation without associated malleolar fracture (Figure 1). Emergency reduction was performed under sedation in the operating room. Post-reduction radiographs showed satisfactory joint congruence (Figure 2).

The patient was immobilized in a cast for 4 weeks, followed by a functional rehabilitation program. At the clinical examination after the cast removal, no joint laxity was detected. An MRI performed to assess the ligamentous state revealed intact periarticular ligaments (Figure 3).

At 12 months post-trauma, the functional results were excellent, with a stable, pain-free ankle and satisfactory range of motion.

Fig 1 : Anteroposterior and lateral radiographs showing a posterior-medial dislocation without a fracture.

Figure 2 : Anteroposterior and lateral radiographs of the ankle after reduction.

Figure 3 : MRI of the ankle showing intact periarticular ligaments.

Discussion:

Tibiotalar Dislocation Without Malleolar Fracture: A Rare Injury

Tibiotalar dislocation without malleolar fracture is an extremely rare injury, typically caused by high-energy trauma. Until 1995, only 73 cases had been reported in the literature [1]. This rarity is explained by the strength of the ligaments compared to the malleoli, making fractures more likely than dislocations in the event of trauma [2].

Classification and Mechanisms

Several classifications have been described. In 1961, Conwell and Key classified these dislocations based on their frequency: posterior, anterior, superior, and lateral. In 1962, Kelly and Peterson proposed a similar system [3]. In 1965, Fahey and Murphy identified five types based on direction: anterior, posterior, lateral, medial, and superior, or a combination of these directions [4]. Among these, posterior dislocations are the most common, according to Rios-Luna [5].

The mechanisms reported in the literature often involve a combination of plantar flexion and forced inversion of the foot under high-energy trauma with axial loading [6]. In plantar flexion, the narrower posterior part of the talus fits into the mortise of the ankle, an unstable position that favors capsuloligamentous failure and the risk of dislocation [7]. Fahey and Murphy demonstrated that this combination frequently leads to a posterior-medial dislocation, as in our case [4].

Risk Factors

Several risk factors can predispose to a tibiotalar dislocation without malleolar fracture: ligamentous hyperlaxity, hypoplasia of the medial malleolus, inadequate talus coverage, weakness of the fibular muscles, or a history of recurrent ankle sprains [2,5,7].

Management

Emergency reduction is unanimously recommended to avoid complications such as neurovascular injury, skin necrosis, chondrolysis, or avascular necrosis of the talus [9]. It is preferably performed under general anesthesia, promoting muscle relaxation. In some cases, surgical reduction may be necessary, especially if the fibula is incarcerated behind the tibia. After reduction, stress radiographs are used to assess ligament integrity [8].

Orthopedic management generally consists of immobilization in a cast without weight-bearing for 6 to 8 weeks, providing sufficient ligament healing potential [1]. Emergency ligament repair is controversial, but some authors recommend it in the case of an open dislocation [1].

Outcome and Prognosis

The functional results of these dislocations are generally good, with preserved range of motion. However, complications such as chronic ankle instability or tibiotalar arthritis may arise [5]. Poor prognostic factors include delayed treatment beyond four hours and skin lesions, which increase the risk of arthritis [10].

Conclusion :

Pure tibiotalar dislocation is a rare injury, often caused by violent trauma. Prompt and appropriate management is essential to ensure a good long-term prognosis. The presented case illustrates the effectiveness of orthopedic treatment in managing this condition.

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