


# Unusual presentation of a peritalar fracture-dislocation

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## ABSTRACT

A peritalar dislocation involves simultaneous disruption of the talocalcaneal and talonavicular joints. It is relatively uncommon and account for approximately 1% to 1.5% of all traumatic foot injuries. Medial dislocation is the most frequent type accounting for approximately 80% of reported cases. Lateral peritalar dislocations are less common (17%), and posterior (2.5%) and anterior dislocations are rare (1%). Approximately 55% of medial and 72% of lateral subtypes are associated with fractures. We report the case of a 36-year-old woman who suffered an indirect traumatism during kitesurf practice, after falling from the kite-board trying to avoid an accident. She presented a lateral peritalar dislocation with associated navicular, calcaneal and fibular fractures. A closed reduction was attempted three days from trauma. Six days after the lesion, surgery was performed. We recommend an early diagnosis of peritalar dislocations and a correct recognition of infrequent fractures to avoid usual complications.

**Key words:** Calcaneus; fracture-dislocation; peritalar.

**Level of Evidence:** IV

## PRESENTACIÓN INUSUAL DE UNA FRACTURA-LUXACIÓN PERITALAR

### RESUMEN

Una luxación peritalar implica la ruptura simultánea de las articulaciones talocalcánea y talonavicular. Es relativamente poco frecuente y representa aproximadamente del 1% al 1,5% de todas las lesiones traumáticas del pie. La luxación medial es la más frecuente (alrededor del 80% de los casos comunicados). Las luxaciones peritalares laterales son menos frecuentes (17%) y las posteriores (2,5%) y anteriores son raras (1%). Aproximadamente el 55% del subtipo medial y el 72% del subtipo lateral se asocian con fracturas.

Se presenta el caso de una mujer de 36 años que sufrió un traumatismo indirecto practicando *kitesurf* al caerse de la tabla tratando de evitar un accidente. Sufrió una luxación peritalar lateral con fracturas de escafoides tarsiano, calcáneo y peroné asociadas. A los tres días, se intentó una reducción cerrada y a los seis días, se realizó la cirugía. Se recomienda un diagnóstico precoz de las luxaciones peritalares y un rápido reconocimiento de las fracturas asociadas e infrecuentes, con el fin de evitar complicaciones frecuentes.

**Palabras clave:** Calcáneo; fractura-luxación; peritalar.

**Nivel de Evidencia:** IV

Conflict of interests: The authors have reported none.

## Introduction

Peritalar dislocation implies the simultaneous rupture of the talocalcaneal and the talonavicular joints. The talar bone keeps its anatomic relationships with structures in the tibiofibular mortise, and the calcaneocuboid joint remains intact.<sup>1,2</sup>

There is a close relationship between peritalar dislocation and high-energy traumatism, although this type of lesions can occur in sports too. It is relatively infrequent and represents about 1% to 1.5% of all traumatic foot lesions.<sup>3</sup>

The direction of dislocation determines the medial, lateral, posterior or anterior types of foot dislocation.<sup>4</sup> Medial peritalar dislocation is the most frequent of all and represents approximately 80% of the reported cases.<sup>5</sup> Lateral peritalar dislocations are less frequent (17%) and posterior (2.5%) and anterior (1%) peritalar dislocations are rare. About 55% of the medial subtype and 72% of the lateral subtype are associated with fractures.<sup>1</sup>

The aim of this presentation is to report one case of lateral peritalar dislocation with associated fracture in a young female patient treated unconventionally with closed reduction and deferred minimally-invasive fixation.

## Case

A thirty-six years old female patient suffered an indirect traumatism while practicing kitesurf by falling from her table near the shore while trying to avoid a likely accident due to strong winds. The mechanism of injury involved fore-foot and mid-foot forced plantar flexion. She attended ER in Brazil with an evident reason for consultation: pain and deformity. She was evaluated and diagnosed distal fibular fracture; she was treated with cast with no weight-bearing and clutches assistance, and with NSAIDs. She was advised to consult a specialist in foot and ankle disorders as soon as possible. She consults our hospital three days and twelve hours after the injury. Physical examination shows pain in right foot and ankle, edema, hemorrhagic blisters, especially in retromalleolar and submalleolar regions, and decrease in ankle active movement associated with foot drop. Pulse and sensitivity are fine. X-rays show lateral peritalar dislocation with fracture of navicular, calcaneal and fibular bones (Figures 1-3).

**Figure 1.** AP ankle X-ray. Displaced fibular fracture.

## Treatment

### Closed reduction

After initial evaluation, closed reduction is successfully carried out under neuroleptoanalgesia. The reduction technique we use is a combination: maximal leg longitudinal traction and forceful forward displacement of the foot from the heel (a maneuver resembling boots removal that is also used for posterior ankle dislocation). Afterwards the patient is admitted for inpatient strict supervision of soft tissues and pain management.

CT scan shows a displaced intraarticular fracture of the navicular bone (Figure 4), a displaced calcaneal (sustentaculum tali) fracture with ankle articular congruence (Figure 5) and a displaced distal fracture of the fibular malleolus (Figure 6).

### Surgical procedure

Six days after the injury we perform surgery under spinal anesthesia. The procedure is divided into three surgical times from proximal to distal structures (first, the fibula, and the navicular bone in the end) by a minimally-invasive technique. We stabilize fractures using 3.0 mm Mini Acutrak 2® conic cannulated screws (Acumed, Hillsboro, OR, US).

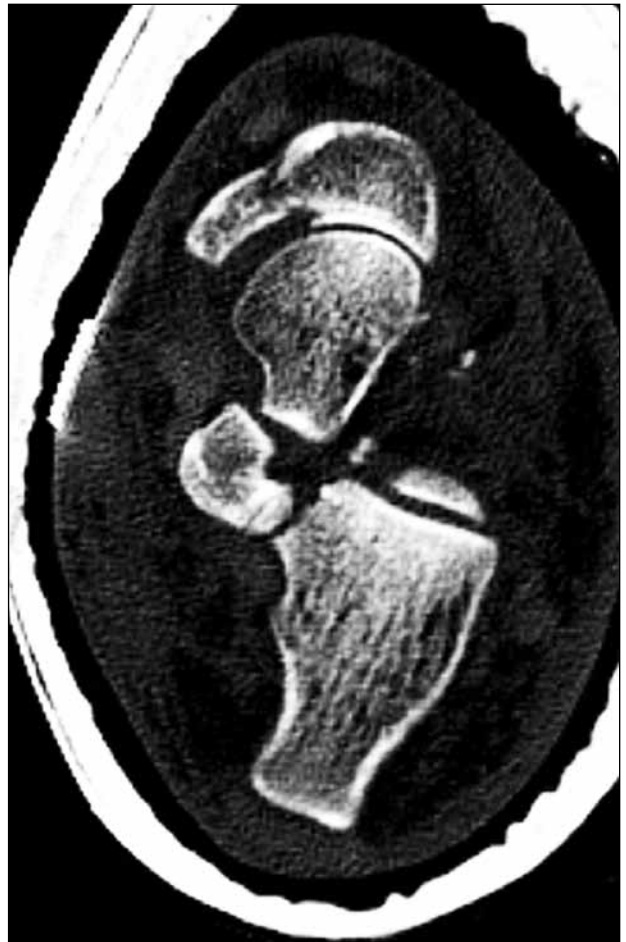




▲ **Figure 2.** Foot lateral X-ray. Subtalar and talonavicular dislocation.



▲ **Figure 3.** Medial oblique X-ray. Navicular bone fracture and peritalar dislocation



▲ **Figure 4.** Cross-section CT scan. Displaced navicular fracture.



◀ **Figure 5.** Coronal-section CT scan. Displaced Sustentaculum tali fracture. Ankle articular congruence.



▲ **Figure 6.** Sagittal-section CT scan. Fibular displaced oblique fracture and fracture in anterior process of calcaneus.

### Postoperative management

The patient starts passive-mobility and muscular-strengthening exercises four weeks later and is restricted body weight-bearing for six weeks. Six months later, she walks with no pain, with complete ankle and mid-tarsal range of motion and little loss of subtalar mobility (range of motion= 15°).

The last X-rays (18 months) show adequate alignment and correction without osteoarthritic changes (Figures 7 and 8). At postoperative stages the patient develops complex regional pain syndrome, which is treated by progressive body weight-bearing and physiotherapy. The disorder resolves completely.

### Discussion

Most cases of peritalar dislocation occur in young males and, in reported studies, the male: female ratio is 6:1.6. Medial dislocation usually results from an inversion/rotation mechanism and is the most frequent type (80%).<sup>7</sup> Approximately 55% of the medial sub-type and 72% of

the lateral subtype are associated with fracture.<sup>1</sup> The case we present here is that of a lateral peritalar dislocation associated with a fairly infrequent fracture.

Most cases of peritalar dislocation can be initially treated by closed reduction. In general, reduction is easily carried out in a sedated patient if there are no significant obstacles (aside from bone obstacles), such as interposition of the extensor retinaculum, fibular tendons or the posterior tibial tendon.<sup>4,8</sup> There are some reports on approximately 10% of the medial injuries and 15-32% of the lateral injuries being impossible to reduce by manipulation.<sup>9</sup> Emergency reduction is key to avoid the cutaneous necrosis caused by the head of the talar bone.<sup>2</sup> The case we present here was managed by close reduction and did not have soft tissue complications.

After reduction, joints are typically stabilized by the hind-foot shape and articular congruence. If the subtalar joint is stable after reduction, osteosynthesis is not necessary.<sup>10</sup> In case of instability after reduction, it is possible to perform temporary fixation of the talonavicular joint with Kirschner pins.<sup>11</sup> In our patient, it was not necessary to carry out temporary osteosynthesis.



Complications secondary to peritalar dislocations are proportionally associated with the injury seriousness. Global complication rates are 20%.<sup>12</sup> Posttraumatic osteoarthritis is frequent after peritalar dislocation, especially in cases of high-energy traumatism, lateral dislocations and dislocations associated with periarticular fracture. Hind-foot rigidity is the most frequent reason for consultation following subtalar dislocation<sup>5</sup>, and residual subtalar instability and osteochondral lesions are not infrequent, especially those on both sides of the sub-talar posterior-lateral aspect.<sup>4,13</sup> Our subtalar case showed partial loss of peritalar mobility, but we believe that this is understandable due to the delay in reduction which worsened the lesion.

After 25-month follow-up, the patient is not restricted to participating in sports, she shows decrease in subtalar range of motion with no signs of osteoarthritis in the ankle and hind-foot. We did not detect talar avascular necrosis, nor was reoperation necessary. Final score in the AOFAS scale was 92. Although our patient suffered complex regional pain syndrome, there was no need for giving specific drugs to her, and she was treated by physiotherapy and progressive body weight-bearing. There are several reports on diverse therapeutic options, but these ones are empiric in a best-case scenario, and there are no reliable protocols to treat all the patients. Early acknowledgement of the lesion and fast treatment administration improve clinical results.<sup>14</sup>

We recommend early diagnosis and appropriate acknowledgement of infrequent fractures in peritalar dislocation to avoid the complications it is usually associated with.



▲ **Figure 7.** X-ray. Healed navicular bone fracture. No degenerative changes in talonavicular joint

**Figure 8.** ▶  
Body weight-bearing foot lateral x-ray. Complete fractures healing.



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