

## Fracture of the posteromedial process of the talus: A rare entity to explore

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### Abstract

Posteromedial process fracture is a rare injury. its diagnosis can go unnoticed, especially when other lesions appear in the foreground. the surgical approach of these fractures is difficult, due to the vascular and nervous elements which block the passage and requires a good understanding of the fracture to properly treat it. We report through the case of a 23-year-old young man presenting a fracture of the posteromedial process associated with a subtalar dislocation, the mechanism, diagnosis and treatment of this fracture.

**Keywords:** Posteromedial Process; Talus Fracture; Subtalar Dislocation; Posteromedial approach; Ankle

### 1. Introduction

Talus fractures account for approximately 3% to 6% of all foot and ankle fractures. They are often associated with significant morbidity and poor outcomes. (1–3)

The fracture of the posteromedial process of the talus is a rare injury which was first described by Cedell in 1974.(4) The diagnosis often goes unnoticed given the importance of associated injuries such as subtalar dislocations or the difficulty to make the diagnosis using only standard radiography, (5) and usually need a CT scanning to recognized it.(6)

we report through this case, the mechanism, diagnosis and management of a fracture of the posteromedial process of the talus associated with a medial subtalar dislocation.

### 2. Case presentation

A 23-year-old patient with no prior medical history, was admitted to the emergency room with an open trauma of the right ankle occurred from a road accident. The patient was riding a motorbike and was hit by a car.

Clinical examination revealed functional impotence of the right lower limb, with a deformed foot in an inverted position and crosswise enlargement of the ankle. The patient also presented a wound facing the lateral side of the ankle, with contused edges, exposing the bone. There was also an abrasion on the medial side. The palpation and the slightest mobilization of the right foot were painful, and there were no associated vascular-nervous disorders.

The patient had initially undergone a conventional x-ray assessment consisting of a frontal and profile incidence which revealed a medial subtalar dislocation with no other bone lesion. (Fig 1)

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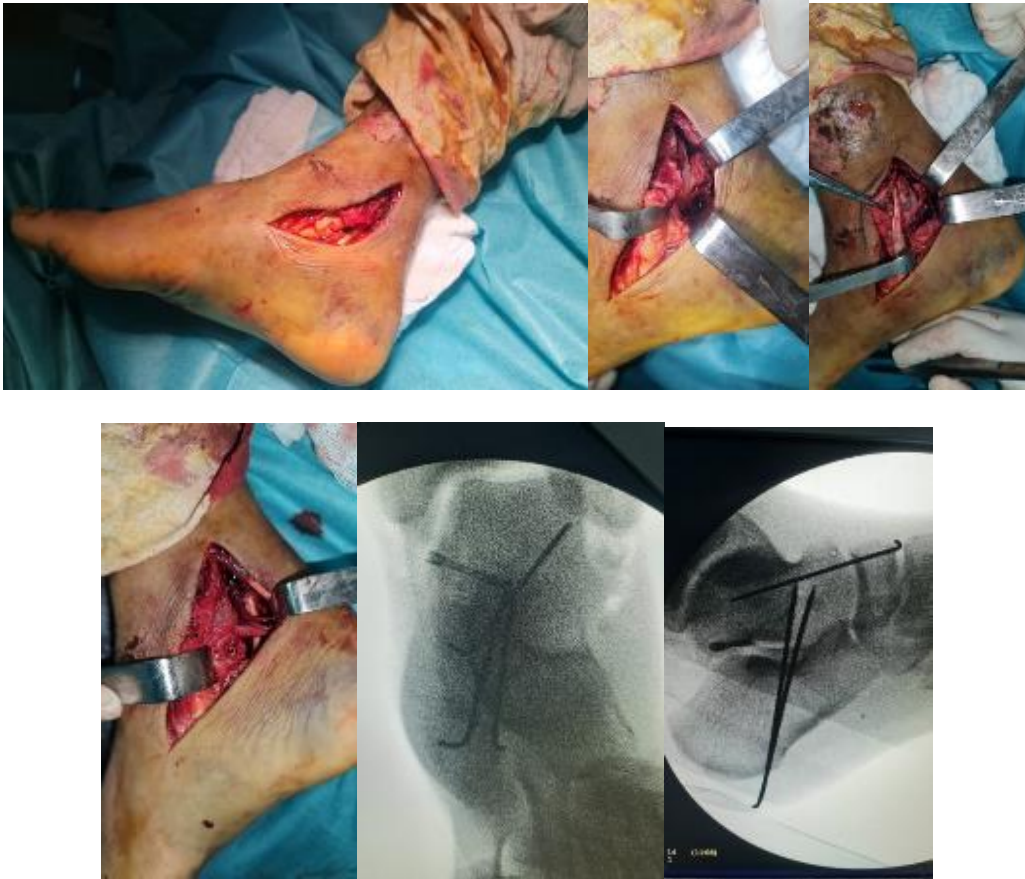
**Figure 1** X-rays showing medial subtalar dislocation



**Figure 2** Control x-rays showing the reduction of the dislocation



**Figure 3** CT scan showing the posteromedial process fracture not seen on the X-rays



**Figure 4** Approach and fixation of the posteromedial process fracture



**Figure 5** X-rays showing consolidation of the fracture after 3 months

The patient was quickly admitted to the operating room, where he underwent reduction of the dislocation by external manipulation, with trimming and suturing of the ankle wound. An X-rays examination of the ankle showed a good reduction of the dislocation. (Fig 2)

A CT scan of the ankle was performed to provide further evidence of the injury. The scan revealed a fracture of the posteromedial process of the right talus, with the fracture extending to the subtalar articular surface. (Fig 3)

In the operating room, using a posteromedial approach and meticulous dissection, we located the posterior tibial pedicle, taking care not to damage it, and then passed between the tibialis posterior and the flexor digitorum longus.

And then the fracture of the posteromedial process of the talus was fully seen. We took advantage of the instability of the subtalar joint to get a good view of the fracture and the subtalar joint space. We then prepared the fracture site with temporary reduction of the fragment with k-wires, and fixed it with a Herbert screw to have a compression of the fragment. Given the instability of the subtalar dislocation, we completed the procedure with temporary talocalcaneal and talonavicular arthrodesis with k-wire for six weeks. (Fig 4)

X-rays at 3 months follow-up show consolidation of the fracture. the patient started full weight bearing on his ankle. (Fig 5)

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### 3. Discussion

Fractures of the posteromedial process of the talus are rare. Cedell et al. describe this fracture as a lesion of the tibiotalar ligament at its talar insertion, reflecting ligament avulsion, which they consider to be a very rare injury. The mechanism is dorsal flexion with pronation of the foot.(4) Our case involved a medial subtalar dislocation and a fracture of the posteromedial process of the talus. The mechanism of this type of dislocation requires a forced inversion combining plantar flexion and supination of the foot, and makes it necessary to look for tibial ligament injury, often associated with subtalar dislocations. (7) Based on these findings, the mechanism of medial subtalar dislocation in our case does not explain the injury to the talus as a ligament avulsion, but rather as a fracture due to the persistence of traumatic energy that applied vertical compression by the tibia on the posteromedial process of the talus after the dislocation occurred.

This type of fracture is often difficult to identify on conventional front and side x-ray views. It is often a small fragment that overlaps with the lateral malleolus on profile and with the anterior part of the talus on front view. (8) To show the fracture on a standard x-ray, oblique incidence at 30 degrees of external rotation avoid this overlapping, but if the fracture is not displaced, visualization of the fragment remains challenging.(9,10) in such cases, the use of a CT scan is particularly useful, as it allows us to visualize the fragment's size, displacement and the complexity of the fracture line, and to establish a strategy to fix it.

In the case of undetected fractures, the flexor hallucis longus may dislocate from its groove during plantar flexion.(11) It may also become incarcerated at the fracture site. (9) Chronic posteromedial ankle pain or even tarsal tunnel syndrome may be observed. (8)

The management of this type of fracture can be limited to orthopedic treatment if the fracture is not displaced, but if the displacement is greater than 3 mm and the subtalar joint is affected, surgical treatment is essential.(12) In our case, surgical treatment is mandatory due to the articular nature of the fracture and the association with subtalar dislocation. Open reduction and internal fixation to restore the anatomy and function of the subtalar joint remains the best therapeutic option. A posteromedial approach, while carefully avoiding the vascular-nervous pedicle, allows good visualization of the fragment and articular surface, as well as good reduction of the fracture line.(13) The safest approach is between the tibialis posterior and the flexor digitorum longus.(14)

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### 4. Conclusion

Fractures of the posteromedial process of the talus are rare injury. However, they can go unnoticed, which is why it is important to suspect the lesion and to perform a CT scan if there is any doubt. The posteromedial approach to the ankle offers the best view of the fragment and the subtalar articular surface, while taking care not to damage the vascular-nervous pedicle.

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### Compliance with ethical standards

#### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

#### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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