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(CASE REPORT)

An unusual lesional association: Sagittal talar and medial malleoli fractures: A case report

Tabbak Khalil [1], Kharroube Mohamed Amine [1], Lamnaouar Foad [1], Mohamed Rahmi [2] and Rafai Mohamed [2]

[1] *Resident in the orthopedic surgery and traumatology wing P32 of CHU IBN rochd Casablanca.*
[2] *Professor in the orthopedic surgery and traumatology wing P32 of CHU IBN rochd Casablanca.*

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Abstract

Talar fracture are the second common after calcaneum in tarsal bones. High-energy trauma (road traffic accident and fall from height) involving forced dorsiflexion of the ankle cause fracture. More frequently, talus fracture involves neck and body is the least. The combination of talar body fracture and ankle dislocation, along with ipsilateral medial malleolar fracture, is exceptionally rare. Few cases have been reported till now that medial side talar body fractures, is typical of supination trauma (compression or shear type), whereas a lateral side fracture is due to pronation or pronationexternal rotation trauma (compression fracture). Talar body fractures have the highest incidence of posttraumatic osteoarthritis among talus fractures.

We report the case of 54-year-old male who sustained a fall from 4 meters. Radiological assessment revealed a Type 2 talar dome fracture and a C1 tibial plafond fracture. The patient underwent surgical fixation with Herbert and cancellous screws, followed by immobilization for 45 days

Keywords: Talar body; Medial malleoli; Communitive; Sagittal fracture; Shear fracture; Osteonecrosis; osteoarthritis

1. Introduction

Talar fracture are the second common after calcaneum in tarsal bones. High-energy trauma (road traf-fic accident and fall from height) involving forced dorsiflexion of the ankle cause fracture. More fre-quently, talus fracture involves neck and body is the least. The combination of talar body fracture and ankle dislocation, along with ipsilateral medial malleolar fracture, is exceptionally rare. Few cases have been reported till now. [1]

that medial side talar body fractures, is typical of supination trauma (compression or shear type), whereas a lateral side fracture is due to pronation or pronationexternal rotation trauma (compression fracture). [2] talar body fractures have the highest incidence of posttraumatic osteoarthritis among talus fractures.[3]

We report the case of 54-year-old male who sustained a fall from 4 meters. Radiological assessment revealed a Type 2 talar dome fracture and a C1 tibial plafond fracture. The patient underwent surgical fixation with Herbert and cancellous screws, followed by immobilization for 45 days.

* Corresponding author: Lamnaouar Foad

2. Case presentation

A 54-year-old patient with no significant medical history suffered a fall from a height of 4 meters, landing on his left foot while at work. Clinical examination revealed a swollen and painful limb with limited mobility, without any skin lacerations, vascular compromise, or neurological deficits. (Fig.1)

Figure 1 Clinical aspect of the left foot: swollen limb with edema and ecchymosis

Radiological evaluation identified a fracture of the talar dome classified as Type 2 according to Sneppen et al., associated with a tibial plafond fracture classified as C1 according to the AO classification (Fig 2, 3).

Figure 2 Radiologic exam of the left foot which shows fracture of the medial malleoli associated with sagittal fracture of the talus and communition of the lateral part

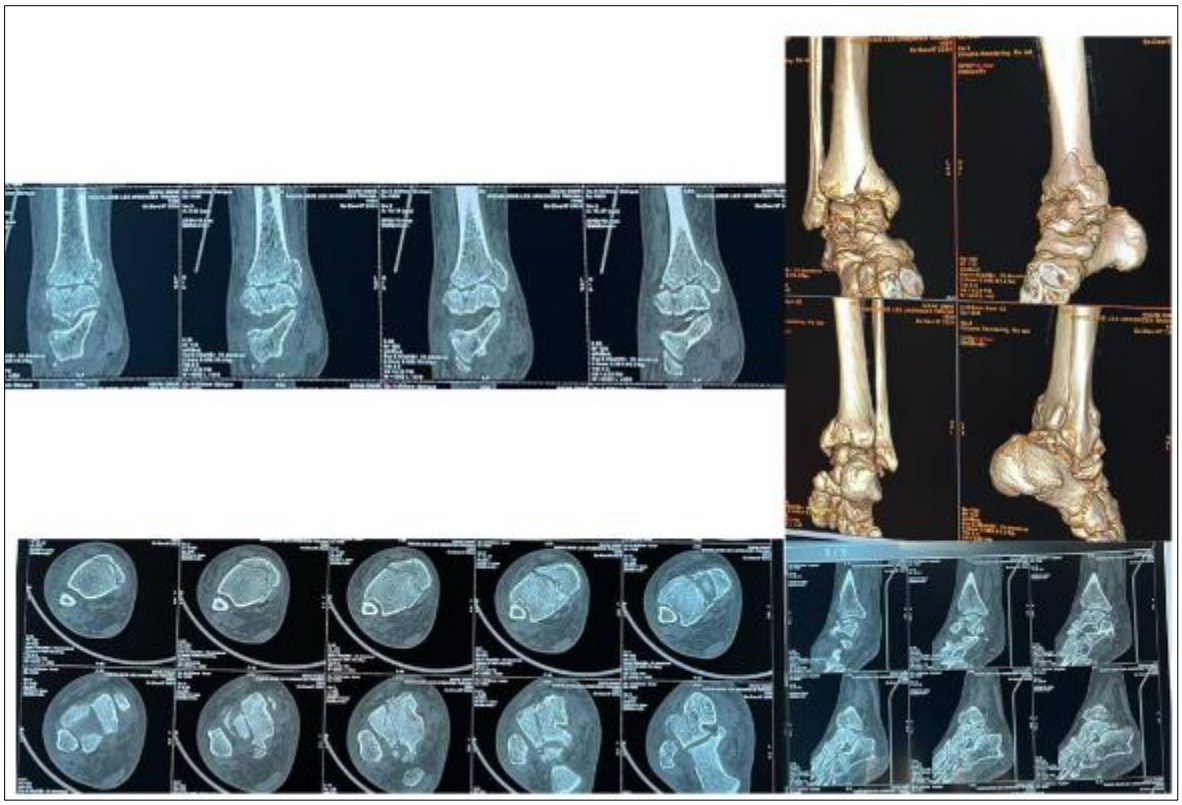

Figure 3 Scannographic imagery of the left foot

After stabilizing the patient, a decision was made to proceed with surgical treatment. In the operating room, with the patient in the supine position and under fluoroscopic guidance, the fracture of the medial malleolus was utilized to perform fixation of the talus using two Herbert screws. Additionally, fixation of the tibial plafond was achieved with three cancellous screws. The procedure was completed with immobilization for 45 days.

Figure 4 Post-operative radiography of the left ankle

Patient was the patient was followed reguilieremental at the consultation until 3 months with the last check-up showing a urvilinear subchondral radiolucent line in the talus which can be a Hawking sign (Fig.5).

Figure 5 Radiological follow up showing curvilinear subchondral radiolucent line

3. Discussion

The second common after calcaneum in tarsal bones.

High-energy trauma (road traffic accident and fall from height) involving forced dorsiflexion of the ankle cause fracture [2]. More frequently, talus fracture involves neck and body is the least. The combination of talar body fracture and ankle dislocation, along with ipsilateral medial malleolar fracture, is exceptionally rare. Few cases have been reported till now [1]

Fractures of the talus have a relatively low incidence accounting for 0.3% of all bone fractures and 3e6% of all foot fractures. Talar body fractures of the talus are uncommon accounting for 7-38% of all talus fractures.[4]

Inokuchi et al. defined talar body fractures as those in which fracture line on the inferior surface extends into the subtalar joint.12 Sneppen et al. classified talar body fractures based on anatomic location into following types: Type A transchondral or osteochondral, Type B coronal shear, Type C sagittal shear, Type D posterior tubercle, Type E lateral process, Type F crush injuries.13 Boyd and Knight classification is also used (Type I – coronal or sagittal shear fractures, Type II – horizontal shear fractures).14 These classifications are seldom used clinically and play little role in the management of these fractures. [5]

A combination of a sagittal talar fracture and medial malleolar fracture seems to be very rare. Sporadic cases have been reported with unpredictable outcome, severe complications dominated by aseptic necrosis and osteoarthritis. However, association of medial malleolus fracture would preserve vascular branches from the deltoid ligament and irrigating the slope and therefore, limit the risk of necrosis. We discuss a case of this association in the literature review. [6]

Those involving body of talus are associated with high incidence of complications such as ankle and subtalar osteoarthrosis and osteonecrosis. The combination of talar body fracture in sagittal plane along with medial malleolus fracture is an unusual pattern of injury and rarely reported in the literature.[6] blood flow is distal to proximal in talus (Figures 3A and3B). The development of arthritis in comminuted fracture is because of our inability to bring exact reduction of the articular fragments; other than that initial fracture displacement is one of the main determinants of treatment outcome. [7]

The Hawkins sign has a similar appearance as the Crescent sign in avascular necrosis (AVN) of the femoral head (AVFH), which isa curvilinear subchondral radiolucent line along the anterolateral aspect of the proximal femoral head. that the

Hawkins sign can be used as a radiographic marker that excludes the development of AVN for the talus. The sign becomes evident 6 to 8 weeks after the injury and represents an area of disuse osteopenia caused by resorption of the subchondral bone and is visualized as a thin subchondral radiolucent line along all or part of the talar dome. [8]

4. Conclusion

These injuries are associated with significant complications, including osteonecrosis and posttraumatic osteoarthritis, due to the talus's unique vascular anatomy and the challenges in achieving precise anatomical reduction. The combination of a talar body fracture with an ipsilateral medial malleolar fracture is exceptionally rare, with few reported cases in the literature.

This case underscores the complexity of managing talar body fractures and emphasizes the need for early diagnosis, appropriate surgical treatment, and long-term follow-up to mitigate complications. Further research and reporting of similar cases are essential to refine treatment protocols and improve patient outcomes in these challenging injuries.

Compliance with ethical standards

Disclosure of conflict of interest

all the authors attest that there is no there is no conflict of interest

Statement of informed consent

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

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