

Unusual fracture dislocation of the ankle

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Citation

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Abstract

Talar fractures are uncommon and talar body fracture dislocations are still rare. We present the case of patient who sustained a simultaneous fracture dislocation of talar body and avulsion of lateral process with fracture of medial malleolus and tibial pilon. No similar cases are reported in the literature to the best of our knowledge. The patient was treated with open reduction and internal fixation of talus through the malleolar fracture. The prognosis after this fracture dislocation is poor because of the very high risk of avascular necrosis.

INTRODUCTION

Fracture dislocations of the talar body are rare and a source of serious injuries. Simultaneous fracture of the talus and the ankle are exceptional. These fractures result from high injury. The prognosis after talar body fracture dislocation is determined by the severity of the injury and the quality of reduction and internal fixation.

The case reported is unusual combination of multiple articular fractures of the distal tibia with a fracture dislocation of the body of talus.

CASE REPORT

A 26-year-old man, admitted to our Emergency Department, had sustained a close injury to his right ankle after an axial compression injury with inversion. The physical examination revealed an obvious deformity of the ankle with his foot lying supinated and adducted, intact skin with no neuro-vascular deficit.

Radiograph revealed a displaced oblique fracture of the medial malleolus and tibial pilon with an associated posterior dislocation of the talar body and minor avulsion of lateral process (fig.1).

Figure 1

Figure 1: Pre operative radiographs



Open reduction and internal fixation was performed through a medial approach. The talar body was found completely rotated behind the tibia. After gross reduction of the talar body, fine reduction of the fracture is achieved and fixed with two cancellous screws from medial side. The medial malleolus and tibial pilon fracture were reduced and fixed with two cancellous screws and k-wires. The stability of the construct was assessed and found to be satisfactory requiring no further fixation.

Post-operative radiographs were satisfactory (fig.2). A below knee cast applied for six weeks and the patient was kept non-weight bearing for another 6 weeks.

Figure 2

Figure 2: Post operative anteroposterior and lateral view



He was allowed to partially weight bear at three months and full weight bearing was commenced at four months.

At 12 months follow up, the patient had dorsi flexion of 15°, planter flexion of 20° and full range of subtalar joint movements. He had a stable ankle and minimal pain on walking uneven ground. The radiographs taken at this time showed no evidence of avascular necrosis (fig.3).

Figure 3

Figure 3: Anteroposterior and lateral radiographs at 12 months follow up



DISCUSSION

Fractures of the talus have a relatively low incidence accounting for 0.3 % of all bone fractures and 3-6 % of all foot fractures (1, 2, 3, 4)

These injuries affect the neck of the talus more than the head or the body. Talar body fractures of the talus are uncommon accounting for 7-38 % of all talus fractures (4, 5, 6).

A combined talar body fracture and medial malleolus fracture is exceptional. We identified only 3 cases of this combination (5,7, 8) without any dislocation of the talar body fragment or pilon fracture. We could not find any reports in literature mentioning this combination of talar body fracture dislocation and medial malleolus with pilon fracture.

The mechanism of injury of these fractures is not clear but is

thought to be similar to the one of talar neck and pilon fractures, dorsi flexion but with added axial compression. The axial force is transmitted through the sagittal axis of the dome of talus and usually produces comminution of the talar body or tibial pilon. Supination may have contributed to this injury in view of the medial malleolus fracture.

In our case, there is a significant displacement of the talar body fragment with concurrent sub dislocation of the ankle. Peterson (9) proposed in this displacement fracture, that the talus acts as a cantilever between the distal tibia and the strong sustentaculum tali of the calcaneus. If the energy is not exhausted, the talar body is extruded posteriorly with deltoid ligament. This mechanism is facilitated by the displaced fracture of the medial malleolus.

Sneppen (6) classified talar body fractures into five groups:

- Compression injuries ;
- Shear fracture(Coronal, sagittal or horizontal) ;
- Fracture of the posterior process ;
- Fracture of the lateral process ;
- Crush fracture.

In cases of ankle and talus fractures, the pathological movement of the foot at the moment of the accident can be related to the morphology of the talus fracture. Our case, with an adducted foot at the time of presentation, produced an oblique fracture of the medial malleolus, a coronal shear fracture of the talar body and a fracture of lateral process. This injury is classifiable as a Sneppen 2 and 4. So we suggested a sixth group that combined Sneppen 2 and 4.

Sneppen and al (6) reported the largest series of talar fracture, have recommended anatomical reduction and rigid internal fixation wherever possible.

If the talar body fracture cannot be completely exposed, a medial malleolar osteotomy gives much better access (in our case patient had a fracture of the medial malleolus). Osteonecrosis may be less likely to occur when fracture of the talus is accompanied by a fracture of the malleolus, which preserves the soft tissue attachments to the talar body fragment. Small undisplaced fracture of the lateral process may be treated conservatively.

Even after restoration of congruity of adjacent joints, complications are not infrequent and most patients have

development of radiographic evidence of osteonecrosis and/or arthritis.

Avascular necrosis of talar body represents a specific complication after talar neck and body fractures resulting from interruption of the blood supply from the sinus tarsi and tarsal tunnel at the talar neck. Even though the rates of avascular necrosis considerably differ in the literature, most of studies indicate a correlation with the initial degree of dislocation and the severity of the injury. This complication is reported in about 50 % after fracture dislocation of talar body (3). Open fractures appear to bear an increased risk of avascular necrosis.

CONCLUSION

Overall we are reporting an unusual association of fracture dislocation of talar body with displaced fracture of medial malleolus and tibial pilon, which is hitherto, unreported.

This combination of multiple articular fractures with posterior dislocation of the talar body, caused by a severe injury have a poor prognosis, but the malleolar fracture that allow adequate visualisation, anatomical reduction and appropriate fixation of the fracture can give us hope to reduce complications.

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