

CASE REPORT

Comminuted fracture of the talus not visible on the initial radiograph

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Fractures of the talus are rare injuries and fractures of the body of the talus are particularly rare. Diagnosis of these fractures is also difficult as initial radiographs may be normal, particularly with osteochondral talar dome fractures. Long term morbidity is common after fractures of the talus. A case is presented of a patient with a comminuted fracture of the body of the talus with non-diagnostic initial standard ankle radiographs. Accident and emergency doctors should be aware of this injury, and be suspicious that patients with an appropriate mechanism of injury and pronounced pain may require further investigation despite normal standard ankle radiographs, as an occult fracture of the talus may be present.

A 35 year old man who was registered blind due to Leiber's optic atrophy presented to the accident and emergency department via emergency ambulance. He had been putting up curtains, standing on a chair at an open ground floor window. He fell through the window, landing on his feet, falling an estimated six feet outside the window. Paramedics called to the scene administered intravenous nalbuphine and splinted the ankle. Initial radiographs were felt to be normal (fig 1). The patient was discharged with a support dressing, analgesia, and a standard advice sheet for patients with ankle sprains. The following day, the patient re-presented in considerable pain despite taking enough dihydrocodeine to cause pupillary miosis. On clinical examination, an ankle effusion was present and tenderness was present over the dorsum of the forefoot. Computed tomography was performed and revealed a comminuted fracture of the talar body (fig 2). The patient was treated by the orthopaedic department, being treated conservatively in a below knee non-weight bearing cast. Radiographs at two months showed good callus formation. The cast was removed and the patient mobilised rapidly, only needing to use crutches intermittently for a short period of time. He failed to attend two further follow up appointments.

DISCUSSION

Fractures of the talus are rare injuries, possibly because of the well protected location of the talus in the ankle joint. Fractures of the talus comprise less than 0.85% of all fractures,¹ with the majority being of the neck, minor avulsion fractures, or talar dome osteochondral fractures. Fractures of the talar neck are usually caused by forced ankle dorsiflexion, as in contact with the pedals or floor in a road traffic accident. Fractures of the body of the talus are particularly rare, comprising less than 0.1% of all fractures.² Falls from a height on to the feet may fracture the body of the talus or result in an osteochondral fracture of the talar dome as well as causing commoner injuries of the calcaneum, ankle, and tibial plafond.

The talus has no muscular or tendinous attachments and thus relies on the integrity of its capsule for its blood supply.



Figure 1 Initial AP radiograph of the ankle.

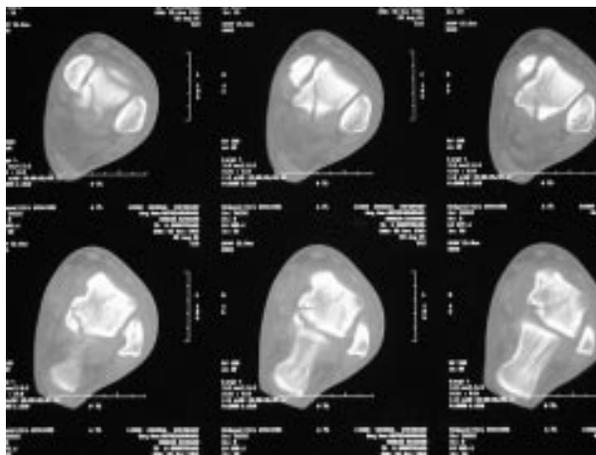


Figure 2 Computed tomogram of the ankle showing comminuted fracture of the body of the talus.

In a similar fashion to the scaphoid, the proximal body gets much of its blood supply from the distal head and therefore fractures can impair the blood supply and cause avascular necrosis.³ Avascular necrosis can lead to osteoarthritis in the long term, particularly as 60%–70% of the talar surface is intra-articular,^{4,5} and the talus is involved in seven separate articulations. A 1 mm discrepancy in the ankle joint articular surface, including the talar dome, attributable to a fracture leads to a 47% decrease in load bearing surface.³ Therefore, talar fractures can lead to osteoarthritis, with or without avascular necrosis. Some of this morbidity could be decreased by early detection and appropriate treatment.

Fracture of the talar body and particularly osteochondral dome fractures are a difficult clinical problem as initial standard ankle radiographs may appear normal.⁶⁻⁹ In a patient with a mechanism of injury that can fracture the talus such as a fall from a height onto the feet, clinicians should not rely only on standard ankle and calcaneal radiographs to exclude fractures. Oblique ankle radiographs with or without plantar flexion of the ankle may reveal occult fractures. Computed tomography of the ankle will demonstrate most talar fractures and hindfoot and this will permit planning of treatment. On occasion, magnetic resonance imaging may be useful, particularly in osteochondral fractures of the talar dome. Isotope bone scanning can be a useful investigation, often before magnetic resonance imaging is carried out. Some osteochondral fractures will be diagnosed on later follow up radiographs in patients with persistent ankle symptoms from an injury initially felt to be a sprain.

This case report show that major fractures of the talar body may be difficult to detect on standard radiographs in addition to well reported difficulties detecting osteochondral fractures. In patients with an appropriate mechanism of injury, accident and emergency clinicians should be aware of this injury and that initial radiographs may not reveal a talar fracture. A high index of suspicion needs to be maintained to avoid missed diagnosis, causing short-term suffering and increased long term morbidity.

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