A case report of a fracture of the lateral process of the talus

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Patient: 43 years, male

Clinical History:
A 43 year old male patient sustained an injury to his right ankle whilst mountain biking. Initial plain radiographs did not show injury clearly. However a fracture to the lateral process of the talus was later identified with CT and treated with excision of the fracture fragment.

Imaging Findings:
A 43 year old gentleman with no significant past medical history, presented to the emergency department following an injury sustained whilst mountain biking. He reported that the bike pedal was suddenly thrust up under his right foot after landing from a jump.
On examination he was unable to weight bear and was tender over the lateral aspect of his talus, inferior to the lateral malleolus.
Plain radiographs of his ankle are suggestive of a small fracture to talus inferiorly to the lateral malleolus although this was missed on initial radiograph reports (Fig 1,2). A subsequent CT scan demonstrated a displaced comminuted intra-articular fracture of the lateral process of the talus which extended into the posterior subtalar joint (Fig 3,4). This was treated with excision of the fracture fragment with good outcome and patient satisfaction.

Discussion:
The lateral process of the talus (LPT) is a wedge shaped prominence that projects laterally from the body of the talus, consisting of two facet joints. The supero-lateral facet provides articulation with the lateral malleolus and the infero-medial facet forms the lateral portion of the subtalar joint. The talocalcaneal and talofibular ligaments find attachments to the LPT.
Fractures of the talus only account for 3% of all fractures, with LPT fractures accounting for only 0.4-1% of all ankle injuries [1]. The exact mechanism of LPT fractures has been a topic of debate with both forced eversion and inversion of the dorsiflexed foot being reported [2-5].

LPT fractures have become more common with the increase in popularity of sport activities such as snowboarding, accounting for 32% of ankle fractures in this subgroup, and are consequently referred to as the ‘snowboarders fracture’ [2]. Prior to the advent of this activity LPT fractures were associated with falls from height, road traffic accidents and direct trauma [1,3]. Importantly LPT fractures may be associated with subtalar dislocations, talar neck fractures, malleolar fractures and lateral collateral ligament and peroneal tendon injuries [1].

Patients present with pain, swelling and haematoma antero-inferior to the lateral malleolus, with painful movements of the ankle and subtalar joints. Fractures frequently extend into the supero-lateral and inferior-medial facet joints. Unsurprisingly, differentiating LPT fractures from other ankle injuries can be difficult, especially since plain radiographs may not clearly demonstrate fractures as shown in this case. For this reason it is estimated that almost a half of all LPT fractures are missed at the time of initial presentation [1-3,5]. These fractures occur in predominantly young people and miss-diagnosis can have potentially disastrous consequences with mal union, non-

union, osteonecrosis, osteoarthritis and disability [1,2,6]. Conventional AP or mortise ankle views are often obtained following ankle injuries where a fracture is suspected. Von Knoch et al. demonstrated in a series of 23 LPT fractures in snowboarders that the normal symmetrical appearance of the LPT on lateral ankle radiographs becomes an asymmetrical or crooked V-shape, which they referred to as a positive V sign (fig 5,6) [7]. However plain radiographs may fail to show the cortical irregularity or fracture line of LPT fractures clearly. Often junior physicians are responsible for interpreting and initiating treatment in the emergency department with the radiologist report of radiographs providing the only senior input for patient management. As a result, it is important for the radiologist to be alert to the clinical features and the mechanism of injury and to interpret radiographs with a high index of suspicion for LPT fractures. LPT fractures should also be considered as part of the differential diagnosis in patients with chronic ankle pain. Importantly, where LPT fractures are suspected, further imaging with CT should be obtained in order to aid diagnosis as well as to provide information regarding fracture size, extent of comminution and degree of displacement which helps guide appropriate fracture management [1,6,8].

**Differential Diagnosis List:** Fracture of the lateral process of the right talus.

**Final Diagnosis:** Fracture of the lateral process of the right talus.

**References:**


Figure 1

Description: Lateral ankle radiograph at presentation Origin:
Description: AP ankle radiograph at presentation Origin:
**Description:** CT scan demonstrating a fracture of the lateral process of the talus. The arrow demonstrates the fracture.

**Origin:**
Figure 4

Description: CT scan showing a comminuted fracture of the lateral process of the talus. The arrows demonstrate the fractures.

Origin:
Figure 5

Description: The normal appearance to the lateral process of the talus

Origin:
**Description:** The crooked V sign as may be seen following a fracture to the lateral process of the talus

**Origin:**