

## A simple ankle sprain or not? Fracture of the lateral process of the talus

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A 22-year-old male presented to the emergency department complaining of lateral ankle pain and the inability to bear weight after sustaining a twisted ankle injury while playing football. On physical examination there was swelling and tenderness over the antero-lateral aspect of the ankle joint but not over the lateral malleolus. Pain was elicited throughout the entire range of ankle motion, and ankle movement was particularly restricted upon inverting the ankle. Neurovascular examination was within normal limits. Standard antero-posterior and lateral ankle radiographs were obtained (Figure 1). **[see page 180 for diagnosis]**



**Figure 1.** Antero-posterior (a) and lateral (b) ankle radiographs.

**Submitted** (Geliş tarihi): 25.10.2012 **Accepted** (Kabul tarihi): 07.11.2012 **Published online** (Online baskı): 23.09.2013

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## DIAGNOSIS: Fracture of the talar lateral process

After carefully assessing antero-posterior and lateral ankle radiographs a small bony fragment just lateral to the talus was identified (Figure 2). Further imaging with computerized tomography (CT) and multiplanar reconstruction demonstrated a displaced fracture of the talar lateral process, which is also called a 'snowboarder's fracture'.<sup>[1]</sup> Due to the incongruity of the posterior subtalar articular surface, an open reduction and screw fixation was performed with a cannulated screw. Postoperative CT showed proper reduction and articular congruity (Figure 3).

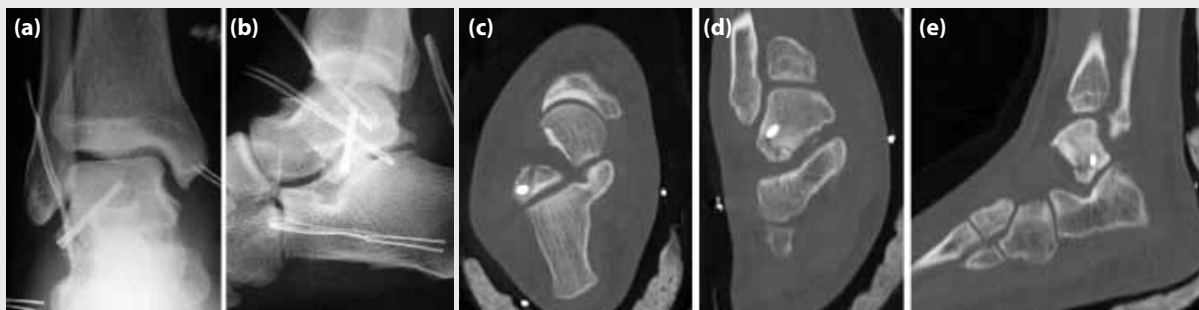
Fractures of the talar lateral process are rare injuries and comprise 0.86% of all ankle fractures.<sup>[2]</sup> However, snowboarding has become more popular and is a commonly performed winter sport, which has increased the incidence of these atypical fractures. In an epidemiological study examining the frequency of snowboarding injuries, the incidence of ankle

fractures have been reported to be as high as 32%.<sup>[1]</sup> Fractures of the talar lateral process are caused by forced ankle dorsiflexion with concomitant hindfoot inversion. There are three different types of talar lateral process fractures. Non-displaced fractures that are larger than 2 mm may be treated conservatively with a short leg cast. If the fracture fragment is comminuted, a fragment excision is performed. Open reduction and fixation is recommended for patients with a displaced large fracture fragment that involves the subtalar joint.<sup>[4]</sup>

The clinical presentation of the snowboarder's fracture is similar to that of a simple ankle sprain. Therefore, these injuries are usually mistakenly diagnosed as an ankle sprain and are otherwise missed in emergency departments. If foot radiographs are taken instead of ankle radiographs, then it is much easier to overlook the small fracture fragment. Furthermore,



**Figure 2.** Antero-posterior (a) and lateral (b) coronal (c), and sagittal (d) reconstruction of the ankle CT. White arrows show the fracture.



**Figure 3.** Early post-operative antero-posterior (a) and lateral (b) ankle radiographs. Axial (c) coronal (d) and sagittal (e) reconstruction of the ankle CT. Anatomic reduction and fixation with a cannulated screw are seen.

the Ottawa ankle rules, which aid in determining whether ankle X-rays should be obtained, might suggest against taking X-rays for patients with a snowboarder's fracture. Thus, patients may be unintentionally discharged from the ED even without an x-ray examination. Clinical mismanagement of talar lateral process fractures may lead to the development of subtalar joint arthritis and chronic ankle pain.<sup>[3]</sup>

Direct radiographic examination is a valuable imaging modality to identify a snowboarder's fracture initially. CT evaluation should be performed afterward in order to determine the fracture type and degree of displacement. Also, CT provides clinical information regarding the configuration of the fracture and its relation to subtalar joint. However, a small fracture may go unnoticed if only axial and wide slice ( $\geq 1$  cm) CT is obtained. So to avoid missing a fracture it is recommended that coronal and sagittal CT reconstruction are performed if possible.<sup>[5]</sup>

What appears to be a simple ankle sprain clinically may not always be the case. The snowboarder's fracture, which is a small but significant fracture that

requires surgery, may have a presentation that is identical to that of a simple foot and ankle sprain. ED physicians must be mindful of talar lateral process fractures and examine ankle radiographs accordingly so to avoid overlooking such a critical diagnosis. If a snowboarder's fracture is suspected, it is highly recommended that a CT of the ankle is obtained so to make a definitive diagnosis and guide subsequent clinical management.

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