

Incidence and Pattern Types of Fractures of the Lateral Process of the Talus

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Abstract

Fractures of the lateral process of the talus have historically been considered unusual. This study sought to more precisely define the typical lateral talar process fracture pattern and its incidence in general trauma patients. Such information may have implications for the clinical treatment of these seemingly increasingly recognized injuries. A retrospective review was performed at our level I trauma center of the x-rays and available computed tomography scans of all talus fractures treated between 2000 and 2005 to identify the respective incidence and variation in fracture configuration of all isolated lateral process injuries. The incidence was 10.4%. The fractures were most commonly single large fragments closely followed in frequency by nonarticular chip patterns.

Historically, fractures of the lateral process of the talus were considered a somewhat unusual fracture, with fewer than 65 cases reported in the English literature.¹ Mukherjee and colleagues² estimated in 1974 that lateral talar process fractures accounted for less than 1% of all ankle injuries. In 1965, Hawkins found that they were the second most common talar body fracture, with an incidence of 24%.³

Recent epidemiologic studies of snowboarding injuries have highlighted the lateral talar process fracture,^{4,5} such that it has been termed *snowboarder's fracture*⁶ and *snowboarder's ankle*.⁷ In a prospective study documenting more than 3000 snowboarding injuries, lateral talar process fractures comprised 15% of all ankle injuries and 34% of ankle fractures.⁶

Although the literature reflects a substantial surge in interest in lateral talar process fractures, recent epidemio-

logic studies have been conducted only on their incidence in snowboarders.⁴⁻⁸ The frequency of these fractures needs to be determined on a much broader clinical scale.

The objective of the study reported here was to more precisely define the typical lateral process fracture pattern and incidence in general trauma patients at a level I trauma center. Such information may have implications for the clinical treatment of these seemingly increasingly recognized injuries.

METHODS

A retrospective review was performed at our level I trauma center of the x-rays and available computed tomography (CT) scans of all talus fractures treated between 2000 and 2005 to identify the respective incidence and variation in fracture configuration of all lateral process injuries. Fracture types were determined according to the McCrory-Bladin⁸ radiographic classification: Type I is a nonarticular chip fracture, type II is a single large fragment that involves the subtalar and talofibular joints, and type III is a comminuted fracture that involves both articulations (Figures 1, 2). Comminuted talus fractures with incidental fracture lines at the lateral process were not included in order to determine the true incidence of isolated injuries of this type.

RESULTS

The incidence of lateral process fractures was 10.4% (16 of 154 talus fractures). Identified fracture patterns fit reasonably well within the McCrory-Bladin radiographic classification. There were 6 type I patterns (37.5%), 7 type II patterns (43.75%), and 3 type III patterns (18.75%). These numeric values reflect isolated lateral talar process fractures.

DISCUSSION

Fractures of the lateral process of the talus have historically been quite rare, seemingly unrecognized before recent studies of snowboarding injuries. Epidemiologic reports^{6,7} demonstrate a vast increase in the frequency of these fractures, yet these quantitative assessments specifically pertain to the sport of snowboarding. In 2005, Valderrabano and colleagues⁹ reported results from a cohort study of the evaluation and treatment, at an orthopedic traumatology clinic, of 20 patients who had sustained a lateral talar process fracture while snowboarding. According to McCrory-Bladin fracture classification, there were 3 type I patterns (15%), 16 type II patterns (80%), and 1 type III pattern (5%).⁹

Our retrospective study determined the incidence of lateral process fractures at a level I trauma center, thereby serving as a reflection of their incidence among all talar

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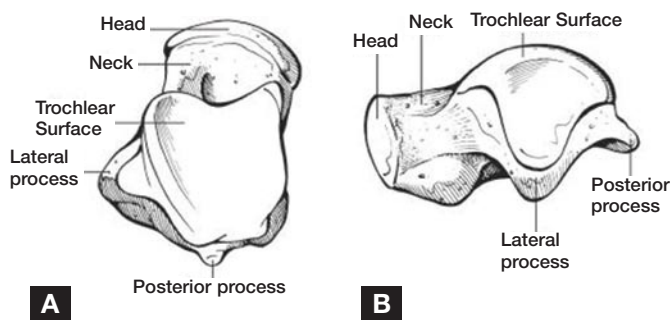


Figure 1. Axial (A) and lateral (B) views of the talus.

injuries in the general population. None of these fractures had occurred while snowboarding. At our institution, isolated lateral process fractures constituted 10.4% of all talus fractures treated over a 5-year period. Interestingly, in both our review of general trauma patients and in the snowboarders cohort study conducted by Valderrabano and colleagues,⁹ the most common lateral process fracture was a single large fragment (ie, type II pattern).

Lateral talar process fractures are commonly misdiagnosed as simple acute or chronic ankle sprains.^{4,6,10-14} Hence, we suspect our calculated incidence, 10.4% of all talus fractures, is likely an underrepresentation. When treating a freshly injured snowboarder or general trauma patient, the physician must consider that each “simple ankle sprain” can mask a lateral talar process fracture. Thorough clinical examination should be followed with basic imaging that includes standard x-rays (anteroposterior and lateral views of the ankle) and a dedicated, 30° Broden view of the subtalar joint. CT scans, in preference over magnetic resonance imaging scans, should be obtained if these views are not fully conclusive for diagnosis or fracture classification.¹⁵⁻¹⁷ Given the general tendency to underestimate lateral talar process fractures (which has been shown to result in undertreatment and poor outcomes^{15,16}), we believe that a CT scan is mandatory for appropriate assessment (of size, displacement, and fragmentation) in almost all cases of this injury. If missed, fractures of the talus can lead to long-term morbidity as a result of malunion, nonunion, and posttraumatic arthritis of the subtalar joint.^{18,19}

CONCLUSIONS

Although the popularity of snowboarding continues to increase at a significant rate worldwide, the fracture of the lateral process of the talus, termed *snowboarder’s fracture* in recent epidemiologic studies,^{4,9} is also commonly treated outside this arena and represents a significant percentage of traumatic talus injuries. The recent rise of snowboarding as a recreational sport will lead to an increased number of talar fractures. Therefore, it is crucial to consider the talus as a potential fracture site in a snowboarder complaining of ankle pain after a fall.

Our study results highlight similar needs for careful assessment, a high index of suspicion, and a thorough workup to rule out lateral process fractures in general trau-



Figure 2. Lateral view of talus shows pattern subtypes of lateral process fractures as defined by McCrory-Bladin⁸ radiographic classification: (A) type I (nonarticular chip fracture), (B) type II (single large fragment that involves subtalar and talofibular joints), (C) type III (comminuted fracture that involves both articulations).

ma patients with acute or chronic lateral ankle pain. Given the potentially poor outcomes and long-term sequelae associated with untreated lateral talar process fractures, any suspicion of such a fracture warrants close assessment and radiographic imaging (anteroposterior, lateral, and Broden views), including CT. Such information may have implications for the clinical treatment and outcomes of these seemingly increasingly recognized injuries.

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