

Fractures of the Lateral Process of the Talus



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KEYWORDS

- Talus • Ankle • LTPF • Lateral talar process fracture • Snowboarder's ankle
- New fracture classification of LTPF • ORIF talar fracture

KEY POINTS

- Lateral talar process fractures (LTPFs) are uncommon injuries but have become more relevant with snowboarding.
- Most fractures require surgical treatment following the principles of open reduction and internal fixation of displaced articular fractures.
- Stable fixation is achieved with small screws and often, if multifragmented, with small T-plates in buttress function.
- Associated injuries, like other foot fractures and/or peroneal tendon dislocation, are common and must be addressed at the same time.
- Overall prognosis is good, but long-term problems may develop and rarely require further surgical procedures.

 Video content accompanies this article at <http://www.foot.theclinics.com/>.

INTRODUCTION AND EPIDEMIOLOGY

Fractures of the lateral process of the talus (LTPFs) are uncommon injuries. Of all fractures, 0.1% to 0.85% are talar fractures and only 20% of these concern the LTPF.¹ With increased popularity of snowboarding sport, the incidence of this fracture has continuously raised.^{2–5} The literature reveals that 15% of snowboarders ankle injuries are correlated with LTPFs. That means that this kind of fracture accounts for 2.3% of all snowboarding injuries.⁶ The symptoms of an LTPF are similar to those of an ankle sprain and explains the frequent overlook and misdiagnosis of this fracture.⁷ Once missed, it can result in significant sequels, including malunion, nonunion and degeneration of the subtalar joint.⁸

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Within the period from 2001 to 2017, the database (open reduction and internal fixation [ORIF]) of the authors' hospital demonstrated 55 patients who needed an ORIF for LTPF. Most of them, 38% (21 patients), had a snowboarding accident, 14% (8 patients) had a climbing accident, and 9% a car accident. All other patients sustained an injury at work, on motorbikes, as pedestrians, or during other sports activities.

Most of the LTPFs were isolated fractures (48 patients [87%]). Only 10% had additional ipsilateral foot fractures (6 patients talar neck and 1 patient anterior process of the talus).

In the same period, the authors operated on exactly the same number of other talar fractures (55 patients) without LTPF; most of them involved the talar neck (28 patients [51%]), followed by the talar body (10 patients [18%]) and other talar fractures (17 patients [31%]).

The incidence of LTPF caused by snowboard injuries alone has decreased remarkably in the past ten years. Analyzing the authors' figures in a 6-year period, the number of ORIFs for LTPFs has decreased from 22 cases (1995–2001) to 10 cases (2002–2008) to only 5 cases (2009–2014). From 2015 to 2017, there was only 1 snowboarder requiring surgical treatment. The authors assume 2 reasons for this change: on one hand, snowboarding has lost popularity, and on the other hand, what might be more important, the progress in development of shoes and bindings has led to a better overall protection of foot structures.

MECHANISM OF INJURY

There have been lot of discussions regarding the exact mechanism causing a LTPF.⁹ Hawkins stated that the fracture is produced by forced dorsiflexion of the foot with associated inversion.¹⁰ Other investigators showed evidence from in vitro biomechanical and clinical studies, suggesting that dorsiflexion, axial impaction, eversion, and external rotation are involved.¹¹ The authors believe that different mechanisms are possible. In the authors' opinion, it seems logical that the mechanism in a car accident might not be the same as a twist of the ankle in a snowboard boot or when landing after a climbing fall. The fracture patterns also differ from single small or large fragments to completely comminuted fractures, indicating the variability of fracture mechanisms.

CLASSIFICATION

Old Classifications

According to Hawkins, 3 types of LTPF are classified. First are the simple fractures that extend from the talofibular articular surface down to the posterior talocalcaneal articular surface of the subtalar joint. Second are the comminuted fractures that involve both the fibular and the posterior calcaneal articular surfaces of the talus and the entire lateral process. And third are chip fractures of the anterior and inferior portion of the posterior articular process of the talus; this type does not extend to the talofibular articulation.¹⁰

McCrary and Bladin,¹² as well as other investigators, reorganized Hawkins' original classification in an attempt to better guide treatment regimens. According to their categorization, type I is a nonarticular chip fracture, type II is a single large fragment involving the talofibular articulation and subtalar joint, and type III is a comminuted fracture also involving both articulations. The McCrary-Bladin classification is actually the most used classification of this fracture¹² (**Fig. 1**).

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