
CASE REPORT

Fracture of Calcaneal Spur

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ABSTRACT

Calcaneal spurs are bony outgrowths of the calcaneus that are common findings on radiographic examination of the foot and ankle. Calcaneal spurs can develop on the plantar tuberosity and extend across the whole width of the calcaneus. Calcaneal spurs are a frequent cause of plantar heel pain, but can be incidentally detected in asymptomatic patients. Fracture of the calcaneal spur is very rare. We report on a 32-year-old woman who presented with heel pain after accidentally slipping and landing on her right heel. Radiograph of her foot showed a fractured calcaneal spur. She was successfully treated with a conservative approach.

Key Words: Fractures, bone; Heel spur

中文摘要

跟骨刺骨折

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跟骨刺為跟骨上的骨贅，為足與踝關節X線檢查的常見發現。跟骨刺可以在足底的跟骨結節上生長並延伸出跟骨全寬。跟骨刺是足跟痛的一個常見病因，但亦可以偶爾在無病徵的病人身上發現。跟骨刺的骨折更為罕見。本文報告一名32歲女性不慎滑倒用右腳跟着地後出現足跟痛。病人的X光片顯示其跟骨刺有骨折，後來病人保守治療成功。

INTRODUCTION

Calcaneal spurs are bony outgrowths of the calcaneus that are common findings on radiographic examination of the foot and ankle. They are a frequent cause of heel pain. Affected patients are likely to be obese, report osteoarthritis in at least one body region, and have current or previous heel pain.¹ Although calcaneal spurs are common, they very rarely fracture. Three patients with such a fracture have previously been reported in the literature,²⁻⁴ and this will be the fourth report.

CASE REPORT

A previously healthy 32-year-old woman presented in November 2011 with heel pain after accidentally slipping and landing on her right heel. She was unable to bear weight on her right foot. Physical examination revealed right heel tenderness without redness or swelling. Her ankle radiograph showed a fractured calcaneal spur (Figure 1). Conservative management consisting of a postoperative shoe and crutches as needed was implemented. One month later, she was able

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Figure 1. A lateral view radiograph of the right ankle joint showing a fracture of the calcaneal spur (arrow).



Figure 2. A lateral view radiograph of the right ankle joint showing the calcaneal spur that was injured 3 years previously without fracture.

to bear weight on her right foot without the crutches and the pain had decreased considerably.

Three years previously, she presented with right ankle pain when she was walking down stairs and slid down two steps. Radiograph of the ankle showed a small calcaneal spur, but no fracture (Figure 2). She was diagnosed with an ankle sprain, and an Aircast Air-Stirrup® ankle brace (DJO Global, Vista, CA, USA)

was placed. Her pain disappeared after a few weeks and her foot regained complete function. Since the pain disappeared completely and the radiograph was normal, the authors assumed that the fracture did not result from this old injury, but rather from the new direct fall onto the heel.

DISCUSSION

Calcaneal spurs can develop on the plantar tuberosity and extend across the whole width of the calcaneus. It is a common finding and has been observed in 11 to 27% of asymptomatic persons, as well as 73% of patients presenting with heel pain.⁵⁻⁷ An analysis based on imaging, anatomic, and paleopathologic investigation defined five different locations at which spurs develop: at the insertion sites of the abductor digiti minimi and flexor digitorum brevis muscles; between the plantar fascia and the above-mentioned muscles; and less commonly, within the plantar fascia and in the insertion site of the short plantar ligament.⁸

The pathophysiology of calcaneal spurs is poorly understood. However, two main mechanisms are suggested. The longitudinal traction hypothesis suggests that repetitive traction of the insertion of the plantar fascia into the calcaneus leads to inflammation and reactive ossification of the enthesis.⁹ The vertical compression hypothesis suggests that calcaneal spurs develop in response to repetitive compression rather than traction. This mechanism particularly suggests that calcaneal spurs are fibrocartilagenous outgrowths, which form in response to calcaneal stress fractures in an attempt to protect the calcaneus against microcracks.¹⁰

Several interventions have been proposed for management of painful heel spurs, including surgical excision,¹¹ extracorporeal shockwave therapy,¹² and radiation therapy. However, there is limited experience with the management of fractured calcaneal spurs. There are three previous reports of similar fractures in the literature. The first patient was treated surgically,² while the other two were successfully treated with a conservative approach.^{3,4} The patient in this report was also successfully managed by a conservative approach.

This patient demonstrates that calcaneal spurs can be rarely fractured if subjected to direct trauma and should be one of the differential diagnoses for heel pain. A conservative approach seems to be reasonable as the first step of management before surgical intervention is considered.

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