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journal homepage: www.casereports.comBizarre calcaneal spur: A case report[☆]Raheef Alatassi^{*}, Ahmad Alajlan, Talal Almalki

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ABSTRACT

INTRODUCTION: A calcaneal spur, also known as enthesophyte, is an abnormal bone outgrowth at the inferior part of the calcaneus, which is the most common site of bony spur occurrence. Although there is consensus that a calcaneal spur is a common cause of heel pain, approximately 20% of calcaneal spurs are asymptomatic and its pathology remains not fully understood.

PRESENTATION OF CASE: In this report, we present a rare case of a very large and bizarre calcaneal spur in a young adult man. The calcaneal spur was painful, which affected his foot function and was associated with plantar fasciitis. The spur length was measured in the radiograph and exhibited the longest calcaneal spur reported in the literature. The patient was treated conservatively, and he fully recovered his foot function.

DISCUSSION: This case was unique because although the patient presented with an extremely large unilateral calcaneal spur, he was young and did not have any chronic disease; hence, he was treated conservatively. The pain subsided and he regained full function of his foot. This case questions the association between calcaneal spur length and plantar fasciitis symptoms.

CONCLUSION: This case confirms that the length of calcaneal spurs, even extremely long ones, is not associated with the pathology of plantar fasciitis and that surgical treatment is not necessary.

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1. Introduction

Calcaneal spur, also known as enthesophyte, is an abnormal bone outgrowth at the inferior part of the calcaneus, from the site of the fibrocartilaginous attachment, specifically the plantar fascia ligament, which is the most common site of a bony spur [1,2]. It was first described by Plettner, a German physician, in 1900 [2–4].

The pathology of calcaneal spur remains not fully understood, but the traditional explanation on the formation of bony heel spur is the longitudinal traction hypothesis: inflammation and reactive ossification of the enthesis, particularly chondroidal and intramembranous ossification, are due to excessive traction of the origin of the plantar fascia at the calcaneal tuberosity [3–7].

Obesity, pes planus, microtrauma, aging, and specific sport activities such as running, jumping, and ballet are all recognized risk factors that contribute to heel spur formation [13–6]. There is consensus that a calcaneal spur is a common cause of heel pain [14,4,5,6]; however, some cases are asymptomatic, with most studies reporting ~16% and Bartold [8] reporting as much as ~30%.

Kuyucu et al. [4] investigated the association of calcaneal spur length with plantar fasciitis, and they reported that calcaneal spur size is a significant factor in terms of pain and function of the heel. However, studies that describe heel pain and functional status in relation to calcaneal spur length and size are limited and inconclusive.

The purpose of presenting this case is to demonstrate if a large calcaneal spur can be associated with severe heel pain. We present a rare case of very large and superficial calcaneal spur in middle-aged man that is painful and affects his foot function. The current case report was written according to the recently published SCARE criteria as it used for supporting transparency and accuracy in publication of case-reports [9].

2. Presentation of case

A 23-year-old male patient, a military personnel, presented to our clinic with a history of left heel pain that had started 2 years prior to presentation. The pain was mostly localized at the medial side of the heel. The pain was intermittent and increased with sport activities such as walking, jogging, or running. He described the pain as stabbing pain or like a pin sticking into the bottom of his feet that can be felt when he first stands up in the morning or during the initial steps of walking after sitting for a prolonged period. He denied any history of trauma to his left foot but reported that the pain decreases during rest. Moreover, he had no history of any

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Fig. 1. Lateral radiograph of the left ankle joint showing a massive, well-defined, bizarre shaped calcaneal spur that originated from the base of the calcaneus.

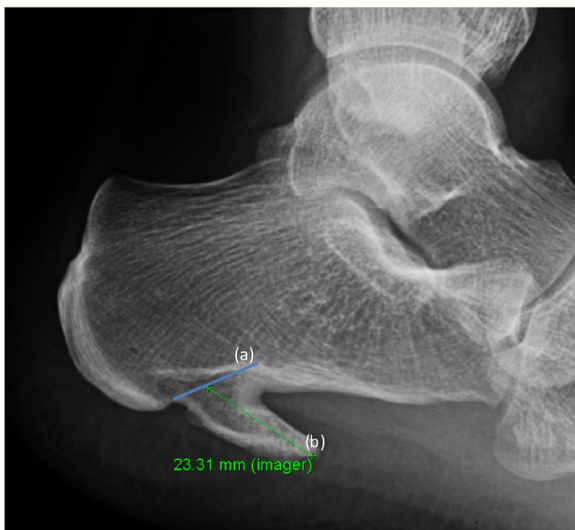


Fig. 2. Lateral heel radiograph showing the spur length. (a) Oblique line demarcating the calcaneal border. (b) Horizontal line from the tip of the spur to the calcaneal border (spur length).

chronic medical illness and he was not involved in any competitive sport activity.

Upon examination, he had normal-looking foot with no obvious deformities. He presented a normal gait. Atrophy was noted on the heel pad of the left foot, compared with the right, and a palpable bony projection from the calcaneus deep in the plantar soft tissue was noted, along with tenderness during deep palpation at the site of the attachment of the plantar fascia to the calcaneus. However, the range of motion of the left ankle and subtalar joints was normal. No other bony prominences were detected elsewhere in the foot.

A lateral plain radiograph revealed a well-defined, large bony projection at the base of the calcaneus, which is identified as a calcaneal spur (Fig. 1). A computer-aided linear measurement of spur length was done, as shown in Fig. 2.

We recommended surgical excision of the spur, as it is very large and irritating to the patient, but the patient refused and he opted for

conservative treatment. A systemic anti-inflammatory medication with heel pad was the first line of treatment with regular follow-up. Furthermore, we referred him to physiotherapy and he started using a night splint. One year later, the pain improved and became intermittent and only presented as a dull ache. The patient was able to tolerate the pain and he regained full function of his left foot without affecting his daily activities.

3. Discussion

In general, ~10% of the population had heel pain, which is mostly at the site of the plantar fascia attachment to the medial tubercle of the calcaneus process and is usually caused by plantar fasciitis [10]. Plantar fasciitis is known to be associated with the formation and presence of calcaneal spur; however, it remains debatable and no clear evidence shows the association between them.

The calcaneal tuberosity, which is the site of insertion of the plantar fascia, and its adjacent areas serve as important points of attachment of several structures that help maintain the integrity of the long arch of the foot, and all of these structures exert a traction force on the tuberosity and the adjacent areas of the calcaneus. These forces have been put forth as stresses that induce bony growths from the calcaneus into the soft tissue [4]. Whether a calcaneal spur is normal or pathological remains unclear, and it often presents asymptotically in 30% of the population. Most of the literature considers calcaneal spur a cause of heel pain and not a part of the normal bone anatomy and that it is associated with plantar fasciitis in 80% of cases [8].

Many systemic diseases, especially inflammatory diseases, can be associated with calcaneal spur such as rheumatoid arthritis, ankylosing spondylitis, diffuse idiopathic skeletal hyperostosis, Reiter syndrome, psoriatic arthritis, and acromegaly. Moreover, obesity, aging, pes planus, occupations involving prolonged standing, and sports are risk factors that contribute to calcaneal spur [3–7], and the calcaneal spurs in these conditions are usually bilateral. However, in most cases of heel pain, unilateral spurs are commonly observed and accounts for ~70% [5]. Our patient is young and did not have any chronic disease and he presented with unilateral heel pain that was caused by a large calcaneal spur. In a systemic review, Irving et al. [11] reported a strong association between high body mass index and calcaneal spur formation in non-athletic populations.

The effect of calcaneal spur size and length on the degree of heel pain or on the functional status of the foot has been minimally discussed in the literature and is unclear. Kuyucu et al. [4] reported in a prospective study that calcaneal spur length had a major linear correlation to multiple foot function scores, with longer the calcaneal spur leading to worse foot functions. Furthermore, they documented that the severity of morning stiffness was significantly correlated to calcaneal spur length. In addition, both age and body mass index had equal relation to spur length.

Although there is no universal method to measure calcaneal spur length accurately, Johal and Milner [12] described a technique for measuring the length using two lines in lateral heel radiograph: the first line demarcates the calcaneal border and the second shows the horizontal line from the calcaneal border to the tip of the spur. The length of our patient's spur is longest reported in the literature and it inserted deep into the soft tissue.

Even with calcaneal spur, conservative management had been used to treat the most painful cases of plantar fasciitis. Local or systemic anti-inflammatory medications, activity modification with stretching exercises, heel pads, and orthoses including heel cuffs, viscous elastic heel pads and custom-made orthoses all are considered as conservative management [6,8]. Although surgical intervention is still not preferable, as it has its own complications,

it is indicated when all conservative measures have been exhausted and have failed. Multiple surgical techniques and approaches have been described in the literature, but most involve plantar fasciotomy at its origin with resection of the osseous spur to some degree.

We have presented a rare case of a large and bizarre-shaped calcaneal spur that is associated with plantar fasciitis in a young healthy adult, which was treated conservatively and with satisfactory improvement of symptoms.

No similar case has been reported in the literature.

4. Conclusion

With this rare case of a massive calcaneal spur with plantar fasciitis in an active young adult who does not have any chronic disease and was treated conservatively, we confirmed that the calcaneal spur was not the pathology behind the plantar fasciitis, even if the spur was extremely large and deeply invaded the soft tissue. Otherwise, this patient would not have significantly improved with conservative management, which clearly indicates, at least in this case, that the size does not matter.

Conflicts of interest

The authors have no conflicts of interest to declare.

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Ethical approval

We have reported a single case and ethical approval have been taken from our institution with valid reference number and without any conditions.

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Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contributions

Raheef Alatassi, surgeon: performed the literature review and data collection, designed the manuscript, and wrote the manuscript.

Ahmad Alajlan, surgeon: contributed to the manuscript writing.

Talal Almalki, surgeon: reviewed the final version of the manuscript.

Registration of research studies

We have reported a single case with no requirement for registry. This manuscript does not describe a clinical study.

Guarantor

Raheef Alatassi.

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