

# Bilateral Paired Calcaneal Spur: A Rare Entity

Sanjay K Rai<sup>1</sup>, Tej P Gupta<sup>2</sup>, Prashant Rajauria<sup>3</sup>, Rohan Satish Munde<sup>4</sup>

## Learning Point of the Article:

A bilateral paired calcaneal spur is a rare radiological entity and has not been reported yet in the literature.

## Abstract

**Introduction:** Heel pain is one of the most common painful conditions of the foot. There are many causes of heel pain, which are usually associated with calcaneal spurs. Hence, it becomes imperative to diagnose and treat them effectively. The development of calcaneal spur is somewhat not well known but is often said to be developed from inflamed plantar fascia. Heel being weight-bearing part of the body, it is very painful something and adversely affects the activity of daily living. Calcaneal spurs are fibrocartilaginous triangular projections from an insertional area of the plantar fascia. Calcaneal spurs are usually single in number but can vary in size. Paired or double calcaneal spurs are not yet reported in the literature and further, the occurrence of bilateral paired calcaneal spurs is extremely rare too. The aim of this case report is to report the occurrence of bilateral paired or double calcaneal spurs.

**Case Report:** A 56-year-old man presented himself at the orthopedics outpatient department with spontaneous onset bilateral heel pain for the past few months. The pain was more in the morning as soon as he gets up from bed and persisted throughout the day with variable intensity.

**Conclusion:** The presence of calcaneal spur is usually symptomatic and may be asymptomatic sometimes. The presence of symptomatic bilateral paired calcaneal spur is rare and the present case report may be helpful for further study.

**Keywords:** Paired calcaneal spur, calcaneal spur, heel pain, plantar fasciitis.

## Introduction

Plettner [1] in 1990 described exostoses of the heel bone. Calcaneal spurs are fibro-cartilaginous triangular projections arising from an insertional area from the calcaneus (calcaneal tuberosity) and with variable sizes described by Kuyucu et al. [2]. Şahin and Sabri Balik [3] have studied the correlation of heel pain with various slope and length of the calcaneal spur and found that slope of  $<30^\circ$  and length of  $<10$  mm do not create much pain. Two types of calcaneal spur have been reported depending on their location, dorsal calcaneal spur on dorsum of calcaneus, and

plantar calcaneal spur on the plantar surface [4]. Further Zhou et al. [5] described another two types of calcaneal spurs, Type A calcaneal spurs which are present superior to the plantar fascial insertion, and Type B calcaneal spurs present within the plantar fascia.

Plantar calcaneal spurs may arise from medial or lateral calcaneal tuberosity. Calcaneal tuberosity is related to the plantar fascia, which is a dense connective tissue rich in fibrocytes. Plantar fascia is attached to the medial aspect of the calcaneal tuberosity and extends to the digits of the foot. The latter is supposed to

Access this article online

Website:  
www.jocr.co.in

DOI:  
<https://doi.org/10.13107/jocr.2023.v13.i11.4048>

## Author's Photo Gallery



Dr. Sanjay K Rai,



Dr. Tej P Gupta



Dr. Prashant Rajauria



Dr. Rohan Satish Munde

<sup>1</sup>Department of Orthopaedics, Military Hospital, Ambala, Haryana, India,

<sup>2</sup>Department of Orthopaedics, Base Hospital Delhi Cantt, New Delhi, India,

<sup>3</sup>Department of Hospital Administration, Military Hospital, Ambala Cantt, Haryana, India,

<sup>4</sup>Department of Orthopedics, SMBT Medical Collage Igatpuri, Nashik, Maharashtra, India.

### Address of Correspondence:

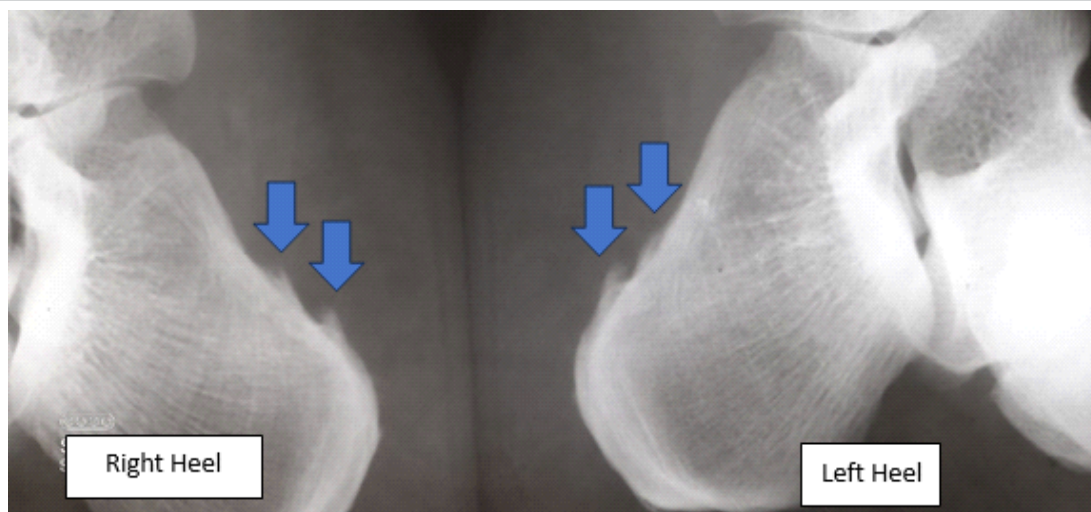
Dr. Sanjay K Rai,  
Department of Orthopaedics, Military Hospital, Ambala, Haryana, India.  
E-mail: skrai47@yahoo.com

Submitted: 07/08/2023; Review: 10/09/2023; Accepted: October 2023; Published: November 2023

DOI: <https://doi.org/10.13107/jocr.2023.v13.i11.4048>

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License <https://creativecommons.org/licenses/by-nc-sa/4.0/>, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms





**Figure 1:** X-ray of both heels shows paired bilateral calcaneal spur. Arrowhead indicate paired calcaneal spur in both heels.

maintain the medial foot arch and act as a shock absorber during weight bearing [4].

### Case Report

A 56-year-old man presented himself at orthopedics outpatient department with spontaneous onset bilateral heel pain for the past few months. The pain was more in the morning as soon as he gets up from bed

and persisted throughout the day with variable intensity. He has no medical comorbidities such as obesity, diabetes, hypertension, autoimmune disease, and rheumatic disorder. He was a sedentary office worker with no history of smoking; however, he was a social drinker.

His both heel's physical examination revealed point tenderness over the medial aspect of both heels on the plantar aspect with mild swelling. His medial plantar arch was well maintained and no neurological disturbance over the foot was detected.

Based on clinical presentation, diagnosis of plantar fasciitis was made and he was advised for a plain X-ray of both heel axial and lateral view which revealed a bilateral paired calcaneal spur (proximal spur was about 4 mm long and distal spur 3 mm long in both heel), as shown in Figure 1. Ultrasonography of both heels showed thickened plantar fascia. Other hematological and rheumatological investigations were unremarkable, as shown in Table 1.

There are various pharmacological and non-pharmacological treatment modalities available. Still, patients are usually suffering from heel pain due to the lack of standardized treatment modalities used clinically. Non-pharmacological treatment modalities include ultrasound, radiofrequency, extracorporeal shock wave therapy, laser therapy, silicon medial arch support, modified shoes, splints, physiotherapy, stretching, and taping. Pharmacological therapy includes non-steroidal anti-inflammatory drugs, local steroids infiltration, and local infiltration of steroids combined with a long-acting local anesthetic agent. Our patient received combined pharmacological therapy ( non-steroidal anti-inflammatory drugs, Naproxen 500 mg twice a day for 7 days and non-

Characteristics	Values
Age	56
Sex	male
Hemoglobin (G%)	12.3
Erythrocyte sedimentation rate	08 mm/h
C-reactive protein	<1.2
RA factor	<5 IU/mL
HLAb27	Negative
Hb1Ac (mean standard deviation)	5.0±1.14
Serum uric acid (mg/dL)	4.6
Body mass index (kg/m <sup>2</sup> )	21.8
Serum cholesterol (mg/dL)	214
Serum cal (mg/dL)	9.21
Serum Vitamin D(ng/mL)	49.32
Serum alk phos (mg/dL)	81.21
Serum creatinine (mg/dL)	0.67
Serum phosphorus (mg/dL)	2.5
Bone mineral density t score	-1.3 ±1.23
Z score	-0.99 ±1.10

**Table 1:** Demographical data and hematological parameters.

pharmacological treatment modalities, ultrasound therapy with the dose at 0.5 w/cm<sup>2</sup>, 3 MHz, pulsed 1:4, for 8 min, for 7 days, with this combined therapy, he has improved as far as in pain intensity is concerned.

### Discussion

Calcaneal spur arises from the calcaneal tuberosity, situated at the posterior plantar surface of the calcaneus. However, usually, calcaneal spurs arise from the medial aspect of calcaneal tuberosity, but they can also arise from the lateral processes and the sulcus [6, 7, 8]. Many authors recorded the variable anatomical appearance of calcaneal spurs as simple or irregular [9, 10]. Duvries [11] and Brody [12] recorded that the simple calcaneal spurs are triangular with a sharp point and with a wider base. Rubin and Witten [8] and Resnick et al. [10] have described calcaneal spurs as smooth sclerotic cortical borders and well-developed trabeculae.

Conventionally, plantar fasciitis was considered an inflammatory condition; however, recent studies have shown a degenerative process [13]. Repeated biomechanical stress and microtrauma by prolonged running, standing jumping, or parade, thus causing microtears at the calcaneal fascia's and are responsible for the degeneration of the plantar fascia [14].

Many studies reported the presence of calcaneal spur in 75.9–89% of the cases with plantar fasciitis [2, 3, 15]. However, the presence of calcaneal spurs in asymptomatic patients was

reported in 16–46% in various studies [2, 15, 16]. Vaish and Vaishya also reported painful non-union of broken calcaneal spur [17]. Later on, Aliessa [18] reported a fracture of the calcaneal spur following the fall.

The presence of calcaneal spur is usually symptomatic and may be asymptomatic sometimes. Various types of calcaneal spur have been described in the literature such as its length, slop, location, types, and fractured spur may affect the intensity of pain and management protocol. However, the presence of symptomatic bilateral paired calcaneal spur has not yet been reported in the literature so far.

### Conclusion

The presence of calcaneal spur is usually symptomatic and may be asymptomatic sometimes. The presence of symptomatic bilateral paired calcaneal spur is rare and the present case report may be helpful for further study.

### Clinical Message

Various types of calcaneal spur have been described in the literature such as short, long, sloped, and fractured; however, bilateral paired calcaneal spur has not been reported so far in the literature.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Conflict of interest:** Nil **Source of support:** None

### References

1. Plettner P. Exostoses of the Heel Bone. Annual Report of the Society for Nature and Medicine in Dresden; 1900.
2. Kuyucu E, Koçyiğit F, Erdil M. The association of calcaneal spur length and clinical and functional parameters in plantar fasciitis. *Int J Surg* 2015;21:28-31.
3. Şahin R, Sabri Balik M. Does the slope and length of the plantar calcaneal spur affect the clinic? *Acta Orthop Belg* 2023;89:146-51.
4. Menz HB, Thomas MJ, Marshall M, Rathod-Mistry T, Hall A, Chesterton LS, et al. Coexistence of plantar calcaneal spurs and plantar fascial thickening in individuals with plantar heel pain. *Rheumatology (Oxford)* 2019;58:237-45.
5. Zhou B, Zhou Y, Tao X, Yuan C, Tang K. Classification of calcaneal spurs and their relationship with plantar fasciitis. *J Foot Ankle Surg* 2015;54:594-600.
6. Kirkpatrick J, Yassaie O, Mirjalili SA. The plantar calcaneal spur: A review of anatomy, histology, etiology and key associations. *J Anat* 2017;230:743-51.
7. Roland O. Pathogenesis of spur formation on the os calcis. *J Bone Joint Surg* 1912;2:257-74.
8. Rubin G, Witten M. Plantar calcaneal spurs. *Am J Orthop* 1963;5:38-41.
9. Mason RM, Murray RS, Oates JK, Young AC. A comparative radiological study of Reiter's disease, rheumatoid

arthritis and ankylosing spondylitis. *J Bone Joint Surg Br* 1959;41-B:137-48.

10. Resnick D, Feingold ML, Curd J, Niwayama G, Goergen TG. Calcaneal abnormalities in articular disorders. Rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis, and Reiter syndrome. *Radiology* 1977;125:355-66.

11. Duvries HL. Heel spur (calcaneal spur). *AMA Arch Surg* 1957;74:536-42.

12. Brody B. Progressive changes in the pathology of a heel spur. *J Am Podiatry Assoc* 1962;52:754-5.

13. Tu P, Bytowski JR. Diagnosis of heel pain. *Am Fam Physician* 2011;84:909-16.

14. Thomas JL, Christensen JC, Kravitz SR, Mendicino RW,

Schuberth JM, Vanore JV, et al. The diagnosis and treatment of heel pain: A clinical practice guideline-revision 2010. *J Foot Ankle Surg* 2010;49:S1-19.

15. Johal KS, Milner SA. Plantar fasciitis and the calcaneal spur: Fact or fiction? *Foot Ankle Surg* 2012;18:39-41.

16. Menz HB, Zammit GV, Landorf KB, Munteanu SE. Plantar calcaneal spurs in older people: Longitudinal traction or vertical compression? *J Foot Ankle Res* 2008;1:7.

17. Vaish A, Vaishya R. Bilateral broken calcaneal spurs. *BMJ Case Rep* 2020;13:e234138.

18. Aliessa KA. A case report of bilateral calcaneal spur fracture after fall from a height. *J Orthop Case Rep* 2022;12:68-70.

**Conflict of Interest:** Nil

**Source of Support:** Nil

**Consent:** The authors confirm that informed consent was obtained from the patient for publication of this case report

**How to Cite this Article**

Rai SK, Gupta TP, Rajauria P, Munde RS. Bilateral Paired Calcaneal Spur: A Rare Entity. *Journal of Orthopaedic Case Reports* 2023 November;13(11):167-170.