

Calcaneal enthesophytes (spurs): An observational study on incidence of spur related heel pain at a tertiary hospital

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Abstract

Background: The plantar calcaneal spurs (PCS) are a bony outgrowth from the calcaneal tuberosity. The most common cause cited for plantar heel pain is biomechanical stress of the plantar fascia and its entheses of the calcaneal tuberosity. Present study was aimed to study incidence of spur (Calcaneal enthesophytes) related heel pain. **Material and Methods:** Present study was a single-center, observational study, conducted in patients 19-60 years, of either gender, coming to orthopaedics out-patient department with complaints of posterior heel pain. **Results:** In present study, 120 patients were studied during study period. Majority of patients were from age group of 41- 50 years (34.17 %) followed by 51- 60 years (28.33 %). Female (59.17 %) predominance was noted. Marginally increased incidence was among right side (55.83 %) as compared to left side (44.17 %). Incidence of heel spur was 59.17 %. Majority had, achilles spur (57.25%), as compared to plantar (29.58%) spur and both type of spurs (5.63 %). 40.85 % patients had BMI above normal (more than 25 kg/m²). Common associated conditions were Diabetes (32.39 %), osteoarthritis (28.17%), hypertension (21.13 %) and rheumatoid arthritis (18.31 %). **Conclusion:** In present study, more incidence of spur related heel pain was noted among patients from 4th – 6th decade, females, overweight or obese, and in illnesses such as diabetes mellitus and osteoarthritis. Lifestyle change and change in footwear can be useful for treatment.

Keywords: spurs, heel pain, Calcaneal enthesophytes, females, overweight

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INTRODUCTION

The plantar calcaneal spurs (PCS) are a bony outgrowth from the calcaneal tuberosity. Spur formation occurs at the site of ligament and tendon insertions into a bone and tends to grow in the direction of natural pull of ligaments and tendons involved.¹ Calcaneal spurs are of two types: Dorsal/posterior spurs and plantar/inferior spurs. It may remain asymptomatic or produce pain in the heel. Plantar

heel pain is the most prevalent complaint presenting to foot and ankle specialists and may be seen in upwards of 11% to 15% of adults.² The most common cause cited for plantar heel pain is biomechanical stress of the plantar fascia and its entheses of the calcaneal tuberosity.³ Mechanical overload, whether the result of biomechanical faults, obesity, or work habits, may contribute to the symptoms of heel pain. Discussion of a biomechanical etiology usually involves the windlass mechanism and tension of the plantar fascia in stance and gait.^{4,5} The most common cause of spur formation is chronic fasciitis which is multifactorial in etiology, both intrinsic and extrinsic. Intrinsic factors include age, excessive foot pronation, obesity, and limited ankle dorsiflexion. Extrinsic factors include occupational prolonged standing, inappropriate shoe wear, and rapid increases in activity level.⁶ Present study was aimed to study incidence of spur (Calcaneal enthesophytes) related heel pain.

MATERIAL AND METHODS

Present study was a single-center, observational study, conducted in Department of Orthopaedic, Sai Sanjeevni Hospital, Kothapeth Hyderabad, Telangana, INDIA. Study period was from July 2019 to June 2021. A written informed consent was taken from study participants and study approval was taken from institutional ethical committee.

Inclusion criteria: Patients 19-60 years, of either gender, coming to orthopaedics out-patient department with complaints of posterior heel pain.

Exclusion criteria: Patients with complaints of bilateral heel pain. Patients who have had old ankle fractures, foot

deformities or any other infective or traumatic pathology involving talar and sub talar joints were excluded from the study. Not willing to participate.

Basic demographic details, complaint details, medical history were noted. A thorough clinical examination with special focus on painful heel was done. Each patient underwent lateral view X ray of ankle joint for painful heel. Radiological diagnosis of calcaneal spur was made and reported by senior radiologist with at least 10 years-experience. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version and statistical analysis was done using descriptive statistics.

RESULTS

In present study, 120 patients were studied during study period. Majority of patients were from age group of 41- 50 years (34.17 %) followed by 51- 60 years (28.33 %). Female (59.17 %) predominance was noted. Marginally increased incidence was among right side (55.83 %) as compared to left side (44.17 %).

Table 1: General characteristics

Patient characteristics	Number of patients (n=120)	Percentage
Age (years)		
19 – 30	14	11.67%
31 - 40	31	25.83%
41 - 50	41	34.17%
51 - 60	34	28.33%
Gender		
Males	49	40.83%
Females	71	59.17%
Laterality		
Right	67	55.83%
Left	53	44.17%

Incidence of heel spur was 59.17 %.

Table 2: Heel spur

Heel spur	Number of patients (n=120)	Percentage
Present	71	59.17%
Absent	49	40.83%

Majority had, achilles spur (57.25%), as compared to plantar (29.58%) spur and both type of spurs (5.63 %). 40.85 % patients had BMI above normal (more than 25 kg/m²). Common associated conditions were Diabetes (32.39 %), osteoarthritis (28.17%), hypertension (21.13 %) and rheumatoid arthritis (18.31 %).

Table 3: Other characteristics

Characteristics	Number of patients (n=71)	Percentage
Type of spur		
Achilles	41	57.75%
Plantar	21	29.58%
Both	4	5.63%
BMI (kg/m ²)		
Normal (18-25)	41	57.75%
Overweight (25.1-30)	22	30.99%
Obese (> 30)	7	9.86%
Associated conditions		
Diabetes	23	32.39%
Osteoarthritis	20	28.17%
Hypertension	15	21.13%
Rheumatoid arthritis	13	18.31%

DISCUSSION

Though there is a correlation between heel pain and plantar calcaneal spurs (PCS), and although PCS do occur in asymptomatic people, they occur at higher rates in those who are symptomatic.⁷ In those who do experience pain with PCS, this has been hypothesized to be due to a wide range of factors, including the size, shape, nerve compression and associated inflammation, as well as whether the PCS is weight-bearing or there is a micro fracture present.^{8,9} Hechmi Toumi *et al.*,¹⁰ studied 1080 lateral ankle radiographs from 2 to 96 years old of patients attending a trauma clinic. Overall, there was 38% of the population who had a spur (Achilles or plantar) and only third (11%) with spurs at both sites (Achilles and plantar). Large spurs were more prevalent in older individuals (40 to 79 years). There were no large plantar spurs in individuals <40 years of age and only 2% for the Achilles. The prevalence of spurs (Achilles and plantar) was significantly higher for woman than men in individuals <50 years of age. There was a notable moderate positive correlation ($r = 0.71$) between both plantar and Achilles spurs for women <30 years of age but no correlation for men ($r = -0.03$). Similar findings were noted in present study. Lourdes RK¹¹ studied 200 ankle lateral view x rays were taken for patients (100 male and 100 female) with complaints of heel pain. Incidence of calcaneal spur with heel pain was 59%, had either plantar or at achilles insertion or both of which 60% of them were women. Most common age group affected was 40-50 years. Similar findings were noted in present study. Prichasuk and Subhadrabandhu¹² found the calcaneal spur in 15.5% of the normal population ($n = 400$) and 65.9% of patients with plantar heel pain ($n = 82$) leading them to suggest it to be one of the causes of heel pain, others being excessive weight gain, ageing and gender. Previous studies suggest that CS is more common in those who have decreased elasticity of the plantar heel fat pad that occurs in older people, females, overweight or obese, and in illnesses such as diabetes mellitus and osteoarthritis.^{13,14,15} Similar findings were noted in present study. These factors combine to create a pathologic overload and micro tears in the fascia at the calcaneal insertion. Tears lead to inflammation where subsequently calcium gets deposited and spur develops.¹⁶ Moroney *et al.*⁹ found 82% of those with PCS were overweight or obese. Furthermore, after adjusting for age and gender, those with PCS were 6.9 times more likely to be obese compared with those without PCS.¹⁷ The condition is often self-limiting if the inciting factors are properly taken care, but the time for resolution of symptoms is highly variable. Most common treatments are symptomatic in the form of analgesic, nonsteroidal anti-inflammatory drugs, physical therapy, stretching exercises, and steroids which are effective mostly in acute

symptoms. In highly symptomatic patients nonresponding to conservative treatment, trial of surgical intervention such as endoscopic plantar fascia release, release of plantar nerve with plantar fascia, and decompression of the first branch of the lateral plantar nerve were found in literature.¹⁸ Change of lifestyle and footwear that can be brought about during early years of symptom could significantly alter the course of the disease preventing it from reaching degenerative stages as it is known to progress with age.

CONCLUSION

In present study, more incidence of spur related heel pain was noted among patients from 4th – 6th decade, females, overweight or obese, and in illnesses such as diabetes mellitus and osteoarthritis. Lifestyle change and change in footwear can be useful for treatment.

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