

**Case Report**

Recurrent Plantar Calcaneal Osteochondroma in a 28-Year-Old Female: A Case Report

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Received: 07 August 2024, **Accepted:** 12 August 2024, **Published:** 14 August 2024**Abstract**

Osteochondromas are the most common type of benign bone tumors, typically originating from the metaphyseal part of long bones. Calcaneal osteochondromas, specifically, are rare and account for a small percentage of all osteochondromas. We present a case of a 28-year-old female with recurrent plantar calcaneal osteochondroma. The patient had a history of a bony mass on her left heel, which first appeared at the age of 12 and recurred after surgical excision. She presented with persistent pain and impaired quality of life. Radiographic investigations revealed a large bony mass arising from the plantar aspect of the calcaneus. Surgical excision was performed, and histopathological examination confirmed a benign osteochondroma. Post-operatively, the patient experienced significant pain relief and regained full range of motion. At the one-year follow-up, there were no signs of recurrence. This case report highlights a unique recurrence of a plantar heel mass in the same area, which has not been previously reported in our region in the literature.

Keywords: Osteochondroma; Calcanus; Recurrence; Heel Mass.**Introduction**

Osteochondroma is a well-known benign tumor of the bone and is the most common form of benign bone tumor [1]. Osteochondromas are defined as “cartilage-capped bony projections arising on the external surface of bones, containing a marrow cavity that is continuous with that of the underlying bone,” according to the WHO definition [2]. They typically arise from the metaphyseal part of bones. Osteochondromas can present as solitary or multiple lesions, as the latter is seen in hereditary multiple exostoses. The inheritance pattern varies depending on the type of osteochondroma, with multiple hereditary exostoses following an autosomal dominant pattern, while single osteochondromas do not have a genetic predisposition. Single osteochondromas are further classified as pedunculated or sessile. Most patients with osteochondroma are asymptomatic. The risk of malignant

transformation in osteochondroma is low, with a reported transformation rate of up to 2% in solitary osteochondromas and up to 25% in the presence of multiple hereditary exostoses [1]. Osteochondroma rarely presents in the calcaneus, furthermore, the majority of reported cases of calcaneal osteochondroma occur during childhood, adolescence, and early adulthood, typically in individuals under the age of 20 [1,3,4,5]. In this context, we present a case of a 28-year-old female presenting with calcaneus osteochondroma.

Case Presentation

This is a study of a 28-year-old female who underwent full excision of a bony mass in the calcaneus in our orthopedic surgery department. The patient presented to the clinic complaining of a hard mass over her left heel, which she had been experiencing for the past 16 years. Her past surgical history revealed that she underwent left calcaneus plantar exostosis excision at the age of

12. However, shortly after the excision, the mass recurred and has been slowly growing ever since.

On physical examination, bilateral pes cavus with tight plantar fascia and gastrocnemius were noted, along with a palpable hard mass on the plantar aspect of the heel, which is tender on palpation. A previous surgical scar was noted on the medial aspect of the foot.



Figure 1: Clinical Image showing left foot with previous surgery scar on the medial aspect.

Initially, a trial of conservative management was offered to the patient, which included analgesia, shoe modification, insoles, and orthotics. However, despite these measures, the patient continued to experience persistent pain during activity and standing, significantly impacting her quality of life.

Radiographic investigations were performed for the patient. The X-ray images revealed a large left calcaneus bony mass arising from the plantar aspect. The CT scan showed a large exostotic bony lesion protruding from the plantar aspect of the calcaneus, the dimensions were measured at 4.2 cm x 2.5 cm x 2.5 cm (maximum dimensions). The cortical outline and medullary canal of the lesion were in continuation with the calcaneus, with no evidence of erosive or destructive changes.



Figure 2: CT scan of the left foot showing left calcaneal bony mass.

The patient underwent excisional surgery at our Center. A medial skin incision was done utilizing the previous surgery scar, and careful dissection was carried out layer by layer. The bony mass and calcaneus were exposed with preservation of the cap covering the mass. Full excision of the mass was carried out from the base of the mass; bone wax was then used over the osteotomized portion of the calcaneus. Closure was done layer by layer and dressing was applied with a supplementary below-knee back slab.



Figure 3: Image showing intra-operative surgical site with the calcaneal mass.



Figure 4: Image showing intra-operative surgical site after excision of the calcaneal mass.

Histopathological examination is consistent with benign osteochondroma. The excised mass consisted of multiple polypoid fragments measuring 3.5 cm x 2 cm. On microscopy, the sections revealed a cap composed of mature hyaline cartilage with overlying fibrosis perichondrium. The specimen tested negative for malignancy.

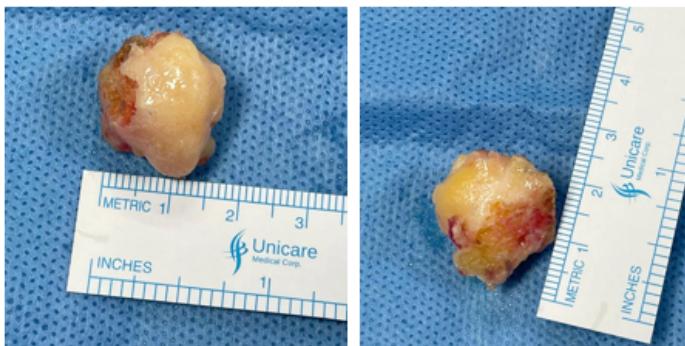


Figure 5: Image of the excised calcaneal mass.

In the immediate post-operative period, the patient was placed in a below-knee back slab for 2 weeks, then she presented to her follow-up appointment for wound inspection and sutures removal.

At the 6-week mark post-surgery, the patient reported a substantial improvement in pain and achieved full range of motion in both the ankle and subtalar joints. Remarkably, 1 year post-operatively, the patient's symptoms had completely resolved, allowing her to resume her normal daily activities without any clinical or radiographic indications of recurrence.



Figure 6: 1-year post-operative X-ray image of the operated left foot.

Discussion

Osteochondromas are the most common type of benign bone tumors, typically arising from the metaphyseal part of long bones [1]. Osteochondroma involving the foot and ankle are rare, accounting for approximately 10% of all incidence rates of osteochondromas [3]. Calcaneal osteochondromas, specifically, are more frequently observed in younger populations, including children, adolescents, and individuals under the age of 20, as observed in our case [1,2,6,7]. Similarly, in our patient, the initial presentation involved a symptomatic plantar mass in the left heel at the age of 12, which was surgically excised and demonstrated no signs of recurrence for over 16 years.

The presentation of calcaneal osteochondromas can vary depending on the specific location in which it arises. While nerve compression symptoms have been reported in the literature [2,7,8], pain remains the most commonly reported symptom [3,6,7,9]. Likewise, our patient initially experienced pain as the primary symptom.

Given the complex anatomy of the calcaneus bone, osteochondromas have been reported in various locations of the bone. In our case, the mass was located on the plantar aspect of the calcaneus, consistent with some previously reported cases [1,4,5].

Malignant transformation in solitary osteochondromas is generally rare, occurring in only 1-2% of cases [1]. However, there have been reported cases of malignant transformation specifically in calcaneal osteochondromas [8,10]. In our patient, post-histopathological analysis did not reveal any evidence of malignant transformation.

Notably, our case presents a unique recurrence of a plantar heel mass in the same area, which had initially appeared when the patient was 12 years old. To the best of our knowledge, similar cases have not been reported in the literature.

Conclusion

Calcaneus osteochondromas are considered a rare presentation of benign bony masses. Treatment of these cases are challenging given the minimal number of reported cases in the literature. Having a bony mass in the foot can present a difficult situation for the patient, specifically to their quality of life and daily activities. Prompt treatment and addressing these masses would have a positive impact on the patient's life

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