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Atypical Location of Enchondroma and its Management – A Case Report

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Learning Point of the Article:

Enchondroma of the calcaneus is a rare but treatable condition that should be considered in patients presenting with heel pain and well-defined radiolucent lesions on radiographs.

Abstract

Introduction: Enchondromas are most commonly found in the bones of the hand and feet. Although the location in the feet is not uncommon the enchondroma of the calcaneus is a rare finding.

Case Report: In this case report, we present a 45-year-old male patient who was diagnosed with enchondroma of the calcaneum. The power burr was used to perform an extended curettage, and the harvested cortico-cancellus bone from the iliac crest was used to fill the cavity; following which the calcaneal plate was applied. At the end of the 1-year follow-up, the patient was asymptomatic, and there was no evidence of recurrence.

Conclusion: Enchondroma of the calcaneum is a rare but treatable condition that should be considered in patients presenting with heel pain and well-defined radiolucent lesions on radiographs.

Keywords: Enchondroma, calcaneus, benign.

Introduction

Enchondroma is a type of benign bone tumor that arises from cartilage. It typically develops within the medullary cavity of the bone and can occur in any bone that contains cartilage. Enchondromas are most commonly found in the bones of the hands and feet. Although the location in the feet is not uncommon the enchondroma of the calcaneum is a rare finding [1]. They are usually slow-growing and asymptomatic, but in some cases, they can cause pain, swelling, or fractures [2].

Enchondromas are generally diagnosed through imaging studies such as X-rays, computed tomography (CT) scans, or magnetic resonance imaging [3]. In this case report, we present a case of atypically located calcaneal enchondroma, managed by extended curettage and autologous bone grafting. This case report is written following CARE guidelines [4].

Case Report

We present a 45-year-old male patient who presented with a history of mild pain and swelling in the right heel for 10 months. The pain was exacerbated by walking and was not relieved by rest. There was no history of trauma or previous foot injuries. On physical examination, tenderness over the medial aspect of the heel was elicited. There was no erythema, warmth, or overlying skin changes.

An X-ray of the foot (AP and oblique view) showed a well-defined, radiolucent lesion in the right calcaneum, with thinning of the surrounding bone cortex (Fig. 1). A CT scan was performed, which showed 24.9 cm × 19.2 mm lytic lesion with a

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Author's Photo Gallery


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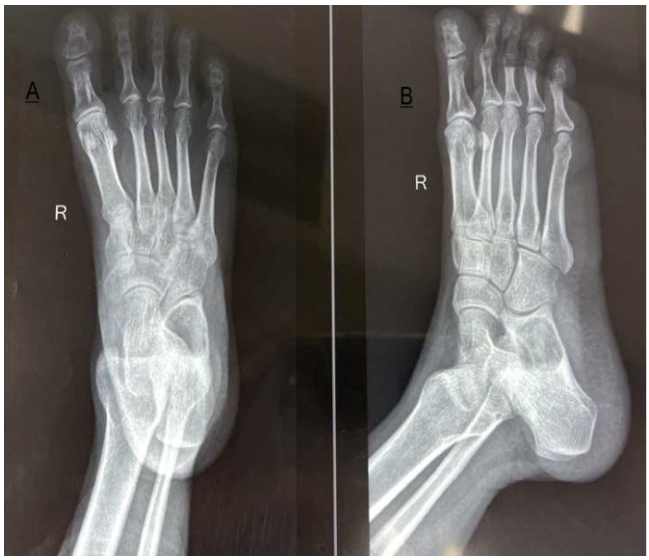

Figure 1: Oblique (a) and Anteroposterior (b) view of calcaneum shows a well-defined, radiolucent lesion with thinning of the bone cortex.

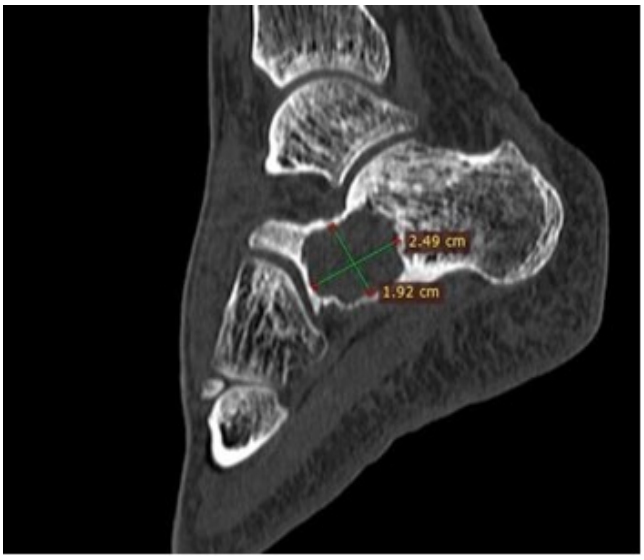

Figure 2: The sagittal computed tomography scan view shows the lesion measuring 2.49 cm × 1.92 cm.

surrounding zone of sclerosis. There was no evidence of soft-tissue involvement (Fig. 2 and 3).

Based on the clinical and radiological findings, a diagnosis of enchondroma of the right calcaneum was made. The patient was advised to undergo extended curettage and autologous bone grafting, of the lesion. During the surgical procedure (extensile lateral approach to calcaneus), the lesion was found to be well-defined, surrounded by a thin layer of cartilage, and easily separated from the surrounding bone tissue. Extended curettage was done with the help of the power burr. The cavity was filled with cortico-cancellus bone harvested from the right side of the iliac crest and the anatomical calcaneal locking plate was applied. Since it was easier for the operative surgeon to take the bone graft from the same side, so the right iliac crest was chosen to take the graft. The surgical specimen was sent for histopathological examination, which showed the lobules of hyaline cartilage separated by bony trabeculae in low magnification and chondrocyte with lacunae confirmed in high magnification, which was consistent with the findings of enchondroma (Fig. 1, 4, 5).

Postoperatively, the patient was advised to rest and avoid weight-bearing activities for 6 weeks. He was followed up regularly in the outpatient clinic, and at the end of the 1 year of follow-up, the patient was asymptomatic, and there was no evidence of recurrence of the lesion (Fig. 6).

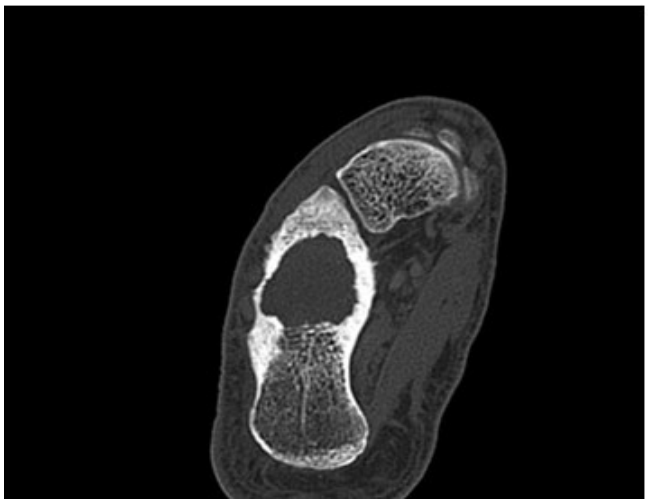

Figure 3: The axial computed tomography scan view shows the lesion with surrounding sclerosis.

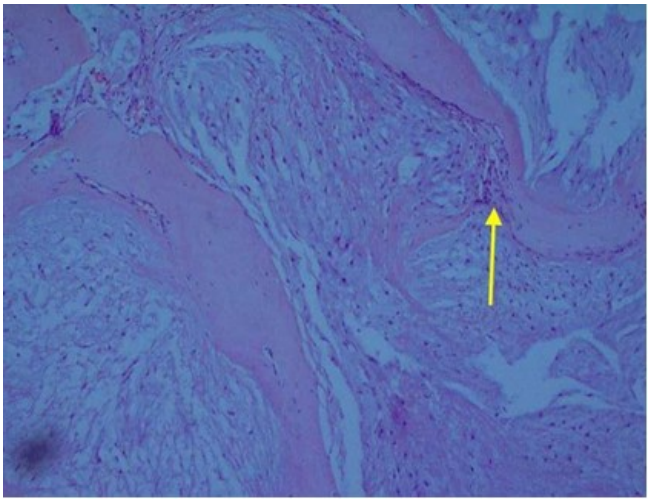

Figure 4: The histopathological examination (×10) depicts lobules of hyaline cartilage separated by bony trabeculae (yellow arrow).

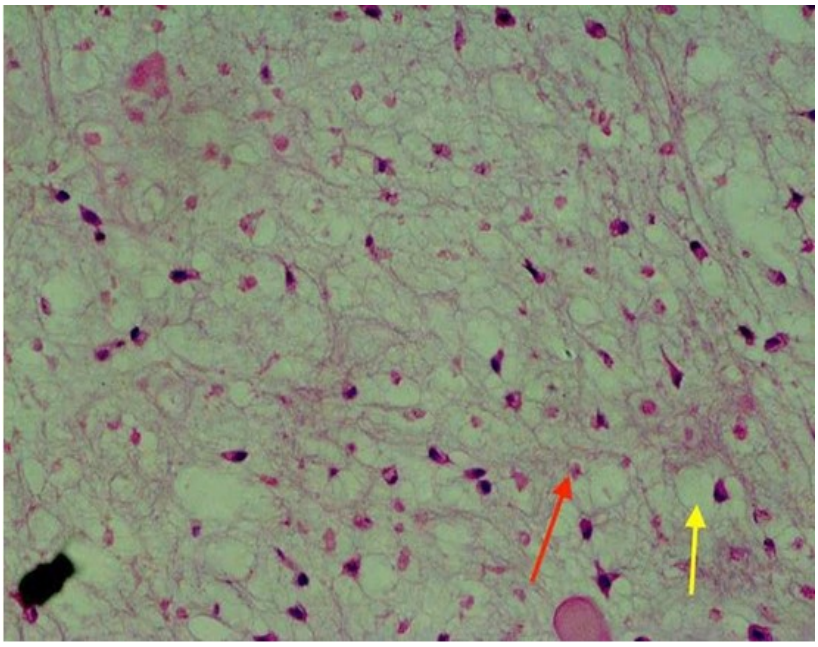

Figure 5: The histopathological examination (×40) revealed the chondrocyte (denoted by red arrow) with lacunae (denoted by yellow arrow).

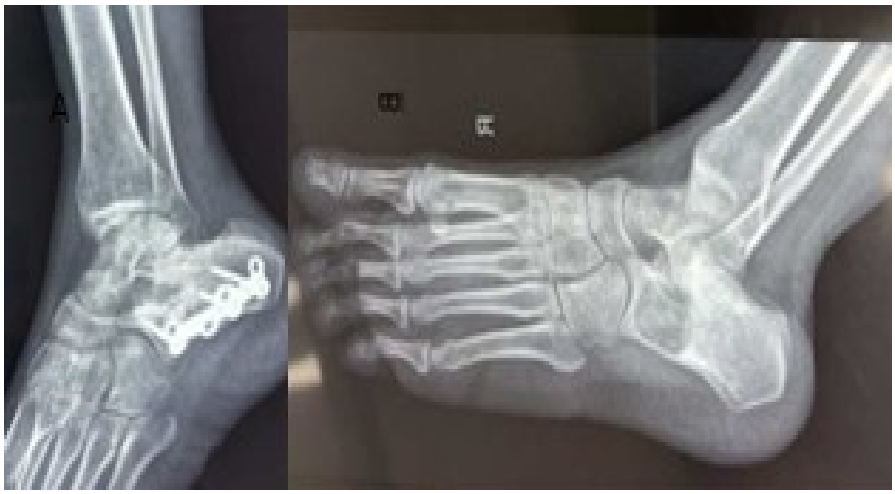

Figure 6: Follow-up X-ray (of 1 year) shows (a) post-operative oblique X-ray of ankle shows union which can be compared with the (b) pre-operative oblique image.

Discussion

The management of enchondromas depends on several factors, including the location, size, and symptoms of the tumor. Asymptomatic enchondromas that are small and stable may not require treatment and can be monitored with regular imaging [5, 6]. Surgery may be necessary for symptomatic or enlarging enchondromas, or in cases where there is a risk of fracture or malignant transformation. As the lesion in our case was painful and the calcaneum also supports body weight, surgery was planned to prevent the pathological fracture.

Radiation therapy may be used in rare cases where surgery is not feasible or effective. Enchondromas have a small risk of transforming into a malignant tumor namely chondrosarcoma [7]. Therefore, patients with enchondroma require long-term monitoring with periodic imaging and clinical exams. Histology of enchondroma shows the lobular pattern, relatively cell-poor hyaline cartilage, often surrounded by a zone of reactive bone formation. The chondrocyte has nuclei and condensed chromatin. Binucleated cells are uncommon with absent mitosis [8].

After conducting thorough research on PubMed, we came across a solitary instance of enchondroma of calcaneum, which has been documented in Table 1 [9]. It is debatable whether surgical excision of solitary single enchondroma is essential [10]. The surgical approach may involve curettage (scraping out the tumor), bone grafting, or amputation (in extreme cases). Curettage and autologous bone grafting are safe, economical, and

S. No.	Author	Year of publication	Age/sex	Size of lesion	Clinical presentation	Procedure	Follow-up
1	Min et al. [12]	2010	44 years/male	53×35×34 mm	Heel pain	Curettage + Bone grafting	Not described
2	Komurcu et al. [9]	2015	55 years/male	23×1 9 mm	Pain and swelling at the heel	Curettage + Bone grafting	Not described
3	This study	-	45 years/male	24.9 cm×19.2 mm	Pain and swelling at the heel	Extended curettage + Bone grafting + Fixation with calcaneal locking plate	Pain-free and symptomatically better.

Table 1: Previous reported case of calcaneal enchondroma.

effective treatment options for enchondroma, and give satisfactory functional and radiographic results [11, 12, 13].

Conclusion

Enchondroma of the calcaneum is a rare but treatable condition that should be considered in patients presenting with heel pain and radiographic findings of a well-defined radiolucent lesion in the calcaneum. Surgical excision is usually curative; regular follow-up is necessary to detect any recurrence.

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

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