Calcaneal Osteochondroma – A Case Report

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ABSTRACT

Osteochondroma is the most common benign chondrogenic lesion of the skeleton. Arising mostly in the long bones of the appendicular skeleton but may involve flat bones as well. Calcaneum however, is an uncommon site. True incidence is still unknown as many are asymptomatic, growing during childhood through adolescent until skeletal maturity. These are managed conservatively in majority of cases. If persists or grows during adulthood with acute onset of pain should raise suspicion of malignant transformation to a chondrosarcoma which warrants its surgical excision. We present the clinical and radiological finding of a 15-year-old male with a solitary osteochondroma (35mm x 26mm) on the inferolateral aspect of right calcaneus, followed by surgical excision. Histopathology showed no malignancy and there was no recurrence at 1 year follow up.

Keywords: Bone tumor, Calcaneal Osteochondroma, Chondrosarcoma

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INTRODUCTION

Osteochondroma is the most common benign tumor of the skeleton and accounts for about 20-50% of all benign bone tumors.[1] Most are asymptomatic, presenting commonly due to mechanical symptoms depending on size and location. It usually arises from the metaphyseal region of the long bones of the appendicular skeleton, often at sites of tendon insertion. Almost half of osteochondromas are located around the knee, in either distal femur or proximal tibia.[2] Osteochondromas grow during childhood and through adolescent until skeletal maturity is attained during which epiphyseal growth

plates close.[3,4] Growth of an osteochondroma in an adult suggests a suspicion of malignant transformation into chondrosarcoma.[4,5] Although there have been case reports of Osteochondroma in skeletally mature adults without any malignant transformation on histopathology.[4,6] Osteochondroma in the ankle and foot are uncommon, with calcaneum being an extremely rare site. [7] In this study we report clinical and radiological findings of a case of calcaneal osteochondroma in a 15-year-old male which was followed by surgical excision.

CASE PRESENTATION

A 15-year-old male presented to our hospital with the complaint of painless swelling in right heel since the past 6 months. It gradually increased in size and got painful over the past 3 months. There was no past history of trauma.On physical examination about 3 x 2 cm bony hard, immobile, tender swelling on posterior inferolateral plantar aspect of right foot was palpated. Overlying skin was normal and range of motion at ankle and sub-talar joint was within normal range. The distal neurovascular status was intact. The Oblique view plain radiograph and MRI right foot plain revealed a 35mm x 26mm osseous swelling (Cartilage cap thickness: 5mm) in dimension arising from the inferolateral aspect of right calcaneus, reported by radiologist as osteochondroma (Figure I and II).

Fig. I: A Pre-operative oblique view radiograph of right foot showing a bony prominence on inferolateral aspect of calcaneus

The surgery was performed under general anesthesia and tourniquet control with patient in prone position. A curved incision was given over the swelling and with blunt dissection the base of the osseous lesion was exposed. During the surgery, the bony lesion was observed to be arising from the inferior and lateral aspect of the calcaneum (Figure III). Complete excision of the bony mass was done (enbloc resection) and specimen was sent for histopathology, which revealed the specimen as a cancellous bone fragment with cartilaginous cap suggesting osteochondroma. Patient was discharged and called for follow-up after 2 weeks during which the physical examination revealed the patient to be pain free and no new lesion was detected on radiographs (Figure IV). There was no recurrence at 1 year follow up.

Fig. II: A pre-operative sagittal view of MRI plain right foot showing bony projection in inferolateral aspect of right calcaneum (35mm x 2.6mm, Cartilage cap (arrowhead) thickness: 5mm)

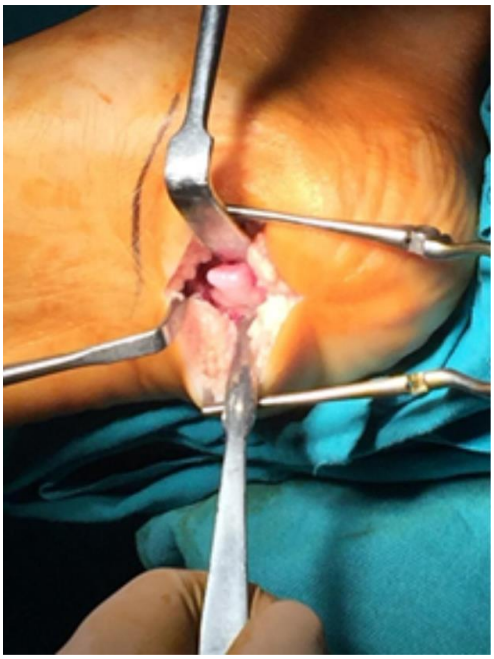

Fig. III: Peroperative picture demonstrating the location of the bony lesion on inferolateral aspect of right calcaneum

Fig. IV: A post-operative Oblique view radiograph of right foot showing no residual lesion.

DISCUSSION

Osteochondroma is a benign cartilaginous lesion found in any bone undergoing endochondral ossification. It is a developmental lesion derived from aberrant cartilage from the perichondral ring and may take the form of a solitary osteochondroma or multiple lesions associated with the disorder multiple hereditary exostosis.[3].Osteochondroma represent about 20-50% of all benign bone tumors.[1] It occurrs mostly in distal femur or proximal tibia,[2] while bones of hand and feet including calcaneus comprising of only about 10% of osteochondromas.[4]

Osteochondroma are commonly diagnosed incidentally on radiographs.[4] Other than this the patient may present with a mass, which may or may not be painful. Most of the asymptomatic lesions do not need any treatment, painful lesions however must be evaluated properly, as pain can be caused by direct mechanical pressure effect on surrounding soft tissues, neurovascular irritation, fracture of the stalk, bursitis over the exostosis or malignant transformation.[4,8]

Radiographs are the mainstay of imaging for osteochondroma and is often diagnostic, revealing much of the classical pathological characteristics such as the orientation of the lesion away from the physis and medullary continuity. The lesion has a cortical surface and a medullary cavity which are continuous with the underlying bone, which may be pedunculated or sessile.[3,9] Radiography however cannot be used to assess the cartilaginous cap of the lesion, where imaging such as MRI is warranted to assess the cartilaginous cap thickness. Other imaging modalities such as CT scan also prove as useful adjunct to localize and for planning resection.[10] Ultrasound has also been used to assess cartilaginous cap thickness,[11,12] but it lacks the ability to evaluate the osseous components of the lesion,[3] and assessment in obese patients is often difficult. Bone scans have not been reported to be useful in the work-up of osteochondroma or in pre-operative planning for resection.[13]

In our case report, we used radiography which revealed a sessile wedge-shaped bony growth on the inferolateral aspect of right calcaneus, and MRI which also revealed 35mm x 26mm bony lesion with a 5mm cartilaginous cap thickness on the inferolateral aspect of right calcaneum. Thick cartilaginous caps, greater than 1 to 2 cm in adults and 2 to 3 cm in children are suggestive of malignant transformation especially when associated with pain.[3,9,14]

Osteochondroma arising from calcaneum has also been previously reported as case reports. Nogier[4] reported an extensively growing osteochondroma in a skeletally mature patient which did not show any evidence of malignancy on histopathology and no signs of recurrence after 4-year follow-up. Another study also reported a painful and rapidly recurrent lesion in the calcaneum in a skeletally mature female patient.[14] Perhaps the most interesting of these case reports is documented by Blitz [9] who claimed to have studied the largest osteochondroma affecting the inferior medial tubercle of calcaneum at the time of his study. He reported a calcaneal osteochondroma measuring of 8 cm × 4.2 cm × 2.1 cm, which was excised and did not show any evidence of recurrence on a 3.5 year of follow-up. Another interesting presentation of osteochondroma of calcaneum was published by Jung[15] who noted a huge painful Haglund's deformity (bony enlargement on the back of the heel near the Achilles tendon) in a 22-year-old female patient, surgical resection of which revealed an Osteochondroma on histopathology.

Asymptomatic lesions can be managed conservatively, and monitored with radiographs and subsequently by clinical examinations. Symptomatic lesions, or lesions growing after skeletal maturity however, require excision after complete work-up has been done. It is important to completely marginally excise the lesion as any residual remnant of cartilaginous cap or any perichondrium can result in recurrence, especially in growing lesions, although reported rate of local recurrence is less than 2-5%.[16, 17]

CONCLUSION

Osteochondroma can also occur in calcaneum which is a rare site for its location. Complete resection is curative.

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