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Case Report

An unusual case of talar osteochondroma causing altered gait in a 7-year-old child

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ABSTRACT

Osteochondromas are benign bone tumours that arise from divergent cartilage formation, most commonly seen in childhood. We present a case report of a 7-year-old male who presented with a solitary lateral ankle mass associated with occasional pain and altered gait pattern for a duration of 18 months after being evaluated in other hospitals, without much success. The patient was successfully treated with open surgical excision, using an anterolateral approach to. Pathologic evaluation reported a benign osteochondroma of talus, and the patient subsequently had routine healing of the postoperative incision site and return to full function without pain or disability at 6-week follow-up. This case study adds to the current understanding, incidence, occurrence, and treatment of rare osteochondromas occurring in the talus causing gait disturbance which has to be identified and treated with surgical excision which in the literature has the lowest recurrence rate of less than 2% following the treatment.

1. Introduction

Osteochondromas are the most common benign bone tumour which are not true neoplasms but arise due to growth of aberrant cartilage over the surface of the bone. It accounts for 20-50% of benign bone tumours and 9% of all bone tumour.[1–3]

Most of the osteochondroma are solitary which accounts for 85% and the rest are multiple which are associated with autosomal dominant multiple hereditary exostoses. The lesion may grow during childhood,[4] but osteochondromas usually do not develops or enlarge after puberty and it stops after fusion of the epiphysis, it has a clear cortico-medullary differentiation.[5]

Most of the osteochondromas remain asymptomatic and are found incidentally on radiographs.[6] Clinically, an osteochondroma in the talus may present with pressure effects. The second most frequent presentation is a painless palpable lump on the involved bone.[7] These bumps can produce cosmetic issues, especially at the proximal tibia and the ribs where they are readily evident and palpable.[8]

The most common site of involvement is distal femur accounting for 30%,[9] proximal tibia 15-20%, and humerus 10-20%, followed by feet and hands 10%. In these bones, osteochondromas are situated at the metaphysis and grow away from the joint.[10] Flat bones such as sternum, scapula, ribs, and hips are involved in less of 5% of cases.[3]

Symptomatic presentation is brought about by mechanical compression of adjacent structures, fracture, bursitis, or malignant transformation.[11] Sometimes an osteochondroma might put pressure on a nerve leading to numbness and tingling in the limb 12 and may also compress a blood vessel resulting in periodic changes in blood flow.

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Osteochondromas can be easily visualised on a plain radiographs. Hence, unusual locations, and unusual presentation can be missed or might cause diagnostic confusion. We present a case of an unusual presentation of an osteochondroma of Talus causing gait disturbance and limitation of functional activity of daily living in a 7-year-old male.

2. Case Report

A 7-year-old male presented to our hospital with pain in the ankle and altered gait pattern. There was no preceding history of trauma. The onset was sudden which started 18 months ago and progressed gradually with no constitutional symptoms. The parents noticed that the child began walking with altered gait pattern with the toes pointing inwards, and he complained of pain on prolonged walking.

Previously the child was treated conservatively with no active intervention without any diagnosis at multiple medical centres. Because of the persistence of symptoms, the patient and his parents sought consultation at our hospital.

We did a systematic evaluation to diagnose the condition. On examination, the ankle was in plantigrade with 10 degrees of inversion with a prominent medial arch and normal plantar crease. A diffuse fullness was noted below the lateral malleoli (Figure 1) which on palpation showed solitary swelling, measuring 2x2 cm. It was non-tender, non-fluctuant with a well-defined regular margin with bony hard consistency. The dorsiflexion was limited by 10 degrees and there were no neurovascular deficits. The gait pattern showed bipedal unassisted with inversion of the foot with hind foot in varus and mild limp with restricted subtalar movements.

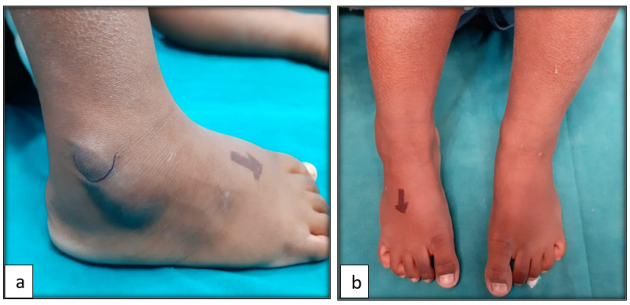

Fig. 1: Reoperative clinical images showing the **a):** Anatomical location and extent of the swelling; **b):** Showing the right ankle in inversion with hind foot varus compared to the left foot

The laboratory tests were normal. Plain radiographs were obtained Anteroposterior and lateral plain radiographs were taken which demonstrated a pedunculated lobulated ovoid calcific mass arising from the lateral aspect of the right talus, which was well-defined. (Figure 2)

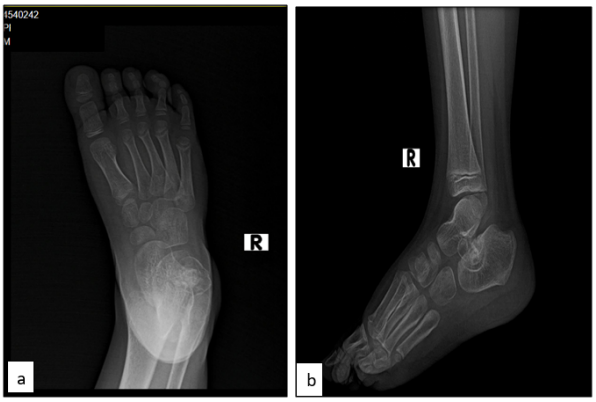

Fig. 2: Plain x-ray radiographs showing **a)**: AP view and **b):** Showing lateral view of the right ankle

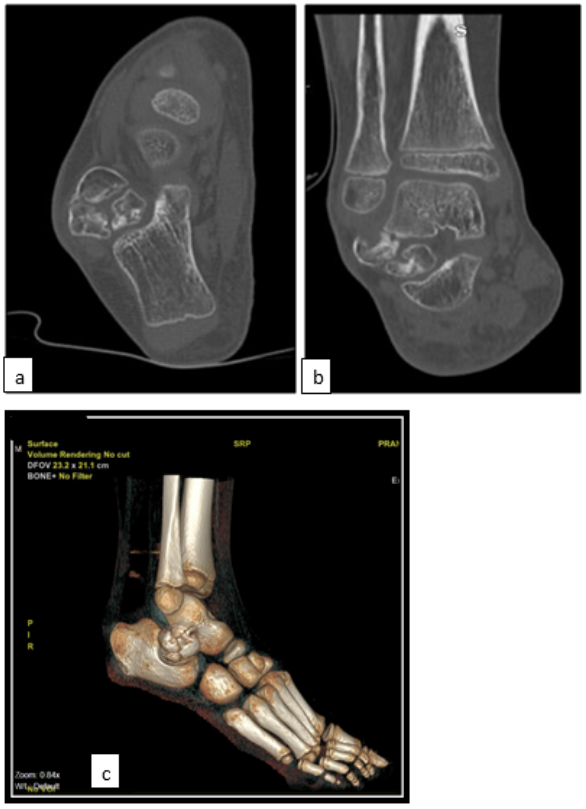

Fig. 3: CT Scan showing **a):** Axial view and **b)**: Coronal view; **c)**: 3D reconstruction showing the extent and bony nature of the swelling

Computed tomography with 3 dimensional reconstruction was performed to confirm the anatomical location of the lesion, to look for the extent and planning the future course of management. The findings showed widening of the subtalar joint with multiple ossified loose bodies within, extending to and obliterating the sinus tarsi with Irregular talar articular margins and subtle erosions was noted with cortical and medullary continuity of the lesion which is characteristic of osteochondroma. (Figure 3)

The MRI showed cartilage covering the calcified mass without any soft tissue extent, the thickness of the cartilaginous cap was 1.5 cm. we re-assed the patient clinically to look for other swellings in the body which was negative and the lesion was solitary. (Figure 4)

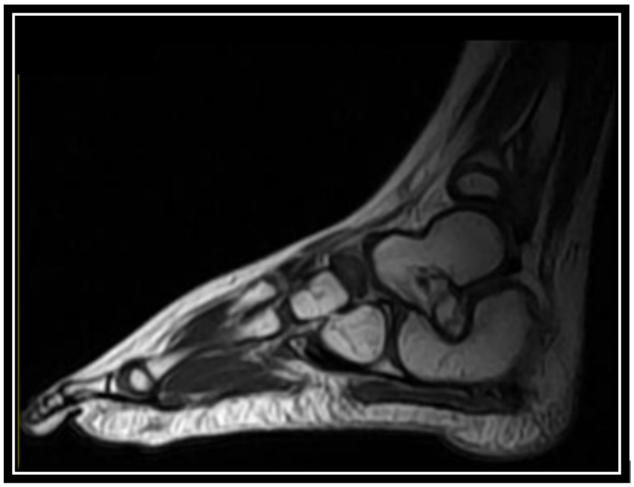

Fig. 4: Sagittal view of MRI showing the location of the mass with the cartilaginous cap

The following differential diagnosis of osteochondroma, synovial chomdromatosis, Dysplasia epiphysealis hemimelica also known as Trevors disease,[12] myositis ossificans, were kept in mind.[13]

The parents were counseled, and the child was taken up for surgical management of the lesion after adequate planning under general anesthesia. A 6 cm curvilinear incision was taken antero-lateral aspect of the ankle, in supine position. The neurovascular structures were retracted and carefully dissected to expose the sinus tarsi and the mass which was approximately 2cm x 2cm, pedunculated covered with a cartilaginous cap. The mass was arising from lateral aspect of the body of talus and had to be excised in three pieces for better visualization and was sent for histopathological diagnosis. Intraoperative fluoroscopy was used to evaluate complete excision of the mass and to analyze complete range of movement of the ankle with no impingement.

The histopathological examination showed fragments of bony trabeculae with fatty marrow surrounded by thickened cartilage cap covered by fibrous perichondrium. The benign

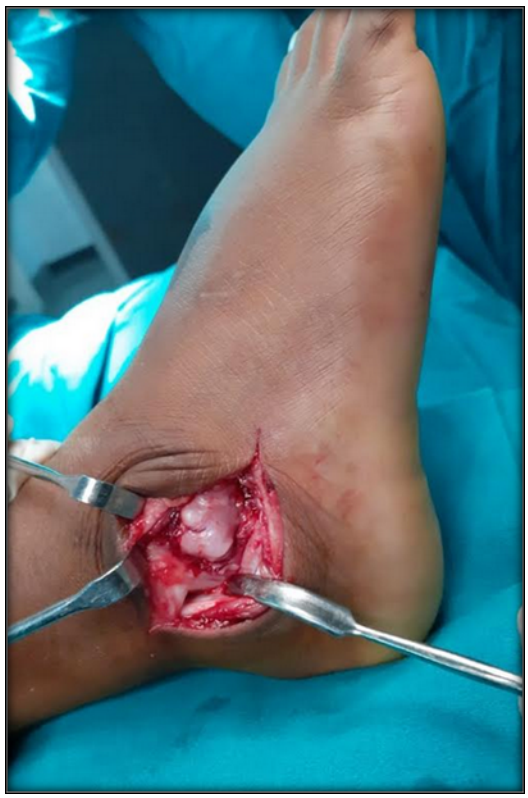

Fig. 5: Intraoperative image showing the anatomical location of the osteochondroma

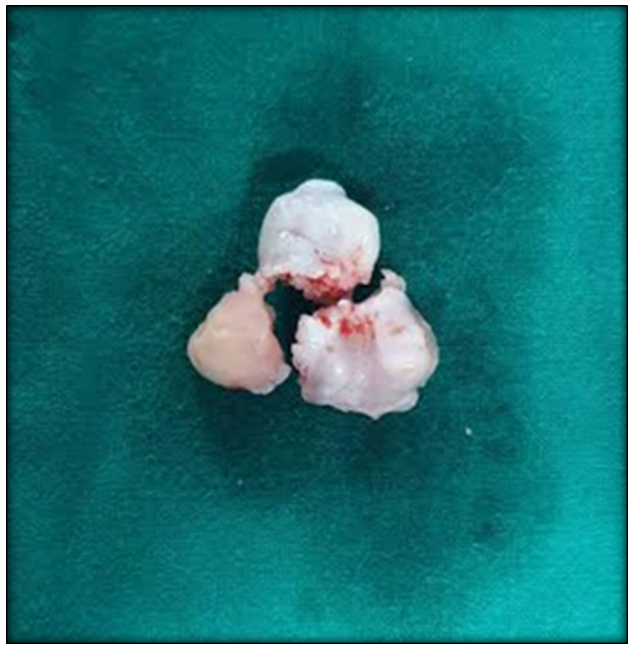

Fig. 6: Excised specimen of the Osteochondroma

chondrocytes are regularly arranged in columns at the base with maturation into trabecular bone consistent with osteochondroma.

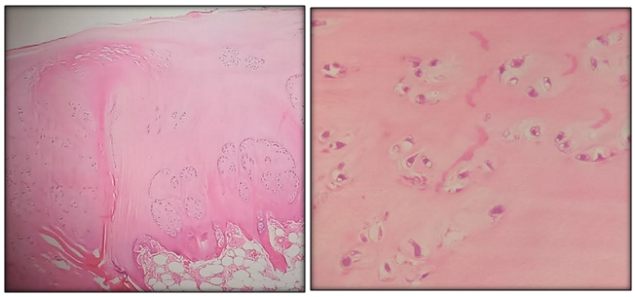

Fig. 7: Histopatological images of the specimen

a. In low power field showing bony trabeculae with fatty marrow. Thicked cartilage cap seen covered by fibrous perichondrium. Benign chondrocytes are regularly arranged in columns at the base.

b. In high power field

The postoperative course was uneventful. A below-knee cast was applied and worn for 3 weeks. Following which patient underwent rehabilitation in the form of ankle range of movement exercise, muscle strengthening, balancing and proprioception exercises and Gait training. At 8 weeks follow up there were no clinical symptoms. During a 6 months postoperative reassessment the patient was asymptomatic and had returned to his functional activity with no limitations in his daily routine. (Figure 8)

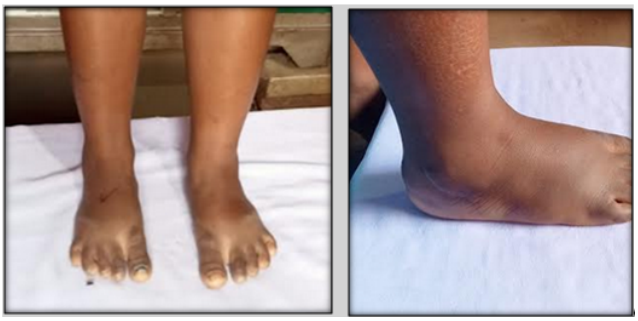

Fig. 8: 6 months post operative follow up images showing the well healed scar

3. Discussion

Osteochondromas are not true neoplasms and can arise from any bone that is surrounded by cartilage. The main presentation of this common benign bone tumour is asymptomatic however it may present with pain due to impingement or locking due to loose body in the joint.[1,2] Pressure effect on the nerve can cause neurological symptoms like tingling, numbness and weakness, or compressive symptoms on the vascular structures can cause stasis in the flow of blood leading to changes in the skin, pseudoaneurysm formation etc.[3,11,14]

There are cases in the literature where growth disturbance and deformities have been reported.[8,15] Tumours in the talus are uncommon, and talar osteochondromas[16] causing altered gait patterns have been described in literature, in rare instances. Erler K et al. described a case of a 6year old boy presenting with pain, swelling in the anterior aspect of the ankle with limited range of movements surgical excision radiology revealed a mass arising from the anterosuperio aspect of the talus which was confirmed to be an osteochondroma on histopathology.[17] Chen Wang et al. similarly described a case of osteochondroma of the talar neck in a 21-year-old girl with a swelling over her right ankle since 8 years associated with restricted terminal dorsiflexion of her ankle.[18]

Common bone tumours that occur in uncommon locations should not be confused or missed as it can result in irreversible damage in the growing bones and cause permanent disability if its not addressed at the right time.

A systematic examination, radiological examination to establish the diagnosis with prompt and early treatment can minimise the permanent damages caused by these benign tumours. Any unexplained persistent compressive symptoms, with swelling in the ankle should always require a radiological evaluation in the form of x-ray, Computed tomography to know the characteristic and extent of the, tumour, MRI is best to delineate the relationship of the lesion to other structures and to know the thickness of the cartilage cap.[5]

Most of the asymptomatic lesions do not require an active intervention except for cases associated with multiple lesions which those that are hereditary or associated with a syndrome have 1% chance of malignant transformation.[15]

Those cases which are causing pressure effects and growth disturbance require extra-periosteal complete excision of the tumour in order to prevent recurrence.[19]

In our case we diagnosed osteochondroma in the boy in a systematic manner and managed him surgically with complete excision of the tumour followed by rehabilitation, the child has recovered with no limitation in his activity of daily living.

4. Conclusion

Osteochondroma of the Talus is rare. A good cascading algorithm to its approach and a treatment protocol can ensure early intervention which will aid in preventing disability, permanent damage and achieve an excellent outcome.

5. Conflict of Interest

None.

6. Source of Funding

None.

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