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A Rare Presentation of Two Distal Fibular Osteochondroma: A Case Report

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Abstract

A rare presentation of two distal fibular osteochondromas in a 19-year-old male is described. Osteochondromas are typically located in the metaphysis of long bones, with distal fibular involvement being exceptionally uncommon[1]. The patient presented with two palpable swelling over the lateral and posterolateral aspect of right ankle. Radiographic and MRI examinations confirmed the presence of two distinct osteochondromas. Surgical excision was performed to address the patient's symptoms, and prevent potential complications. Complete excision was achieved with an uneventful postoperative course. This case highlights the importance of considering distal fibular osteochondromas in the differential diagnosis of ankle swellings and emphasizes the need for surgical intervention in symptomatic cases.

Keywords: Fibula Osteochondroma, Distal, Excision, Exostosis, Cartilage Cap

Introduction

An osteochondroma or exostosis is a benign bone tumour consisting of a bony outgrowth covered by a cartilage cap that occurs commonly in the metaphysis of long bones (distal femur, proximal tibia, proximal humerus) and pelvis, which mostly develops in the age group of 20-30 years[2]. Most osteochondromas are asymptomatic, and seen incidentally during radiographic examination. The most commonly involved locations are the distal femur, the proximal humerus, and the proximal tibia, all of which happen to possess sizable epiphyseal growth plates. The occurrence of an osteochondroma arising in the distal fibula is exceedingly rare. In a 2006 study reported by Saglik et al, only six of the 382 included patients had osteochondromas that were found to occur in the fibula (1.6%), all of which originated in the proximal end[3]. The fibula is affected in 2.4% of primary bone tumours, with the proximal third being more frequently involved than the distal segment.

Osteochondromas around the ankle are very uncommon except in cases of Multiple Hereditary Exostoses. If they

affect the ankle, they are mainly found arising from the interosseous border, deforming distal tibia and fibula, and occurring prior to physeal fusion, as have been reported by Wani et al.[4]

Osteochondroma is reported to be the most common benign bone tumour and may present with pain or as a palpable mass and sometimes difficulty in walking due to friction develop by exostosis on surrounding tissue.[5]

Case Report

A 19year old male student was brought to our orthopaedic outpatient department with complaints of palpable, gradually increasing swelling over right ankle and difficulty while running from the past 1 year. While gripping the ankle to perform the examination, two firm prominence of size of 2*3cm and 3*3cm which were not attached to overlying skin but attached to underlying bone was noted over lateral and posterolateral aspect respectively at the level of the ankle. There were no significant findings of limitation to either dorsal or plantar flexion of the ankle joint on range of motion assessment. Maximum dorsiflexion of the patient's ipsilateral hallux elicited no pain. He Could not recall any prior trauma to his right ankle and had previously been unaware of any physical differences between his two lower extremities. There was no ankle instability with full dorsiflexion and plantarflexion at the right ankle joint.

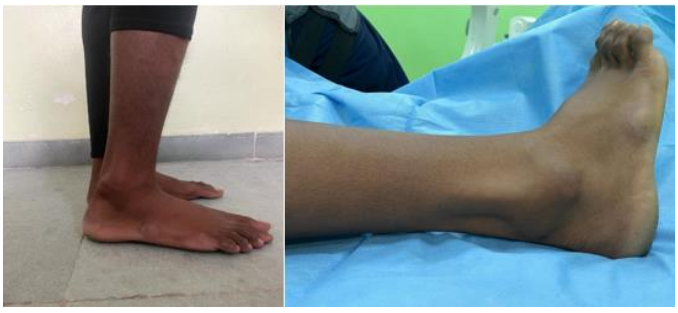

Figure 1&2: Clinical Appearance of the Swelling on the Right Lateral Malleolus Caused by Tumour

Pre-Operative Planning

An X-ray (Antero-posterior and lateral view) was performed showing a well-defined calcified mass arising from the distal aspect of the fibula, from posterolateral approach. The lateral image confirmed the presence of a calcified mass originating from the distal fibula, as was suspected during the clinical assessment. The initial diagnosis was osteochondroma of the distal fibula. We performed a thorough physical examination of the patient's limbs in order to rule out another exostosis. The patient was then advised for a magnetic resonance imaging (MRI) study to be performed on his right ankle.

The results of MRI confirmed the initial clinical suspicion of presence of two distal fibular osteochondroma with the following dimensions-

1. Bony outgrowth of size 2.7*1.8*3.1*cm, (AP*TR*CC) is seen arising from distal fibular metaphysis, directed away from the epiphysis poster-medially. Lesion shows relatively uniform cartilage cap measuring approx. 1.8mm in maximum thickness. Multiple small cystic areas are noted within the lesion. It is mildly compressing flexor hallucis longus muscle medially and peroneus longus muscle laterally. The lesion is posteriorly compressing the sural nerve.
2. Another bony outgrowth of size 7.1*8*13.4* mm is seen at the base of above mentioned lesions approx. 2 cm proximal to the peroneal tubercle directly laterally. It shows a uniform cartilage cap measuring 2.5mm in maximum thickness. It is compressing and displacing peroneus longus and peroneus brevis tendons laterally.

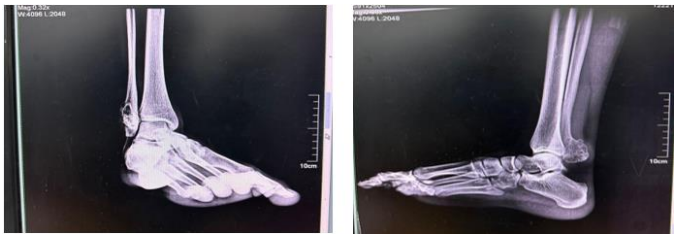

Figure 3 & 4: Antero Posterior and Lateral View of Right Ankle Showing Irregular Calcified Mass Arising from Distal Fibula.

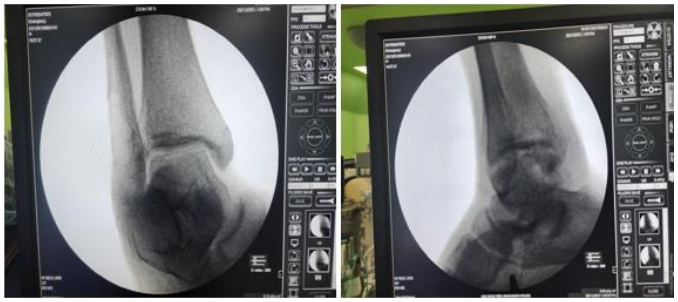

Figure: 5 & 6: Showing Intraoperative Shoot of C Arm After Excision

The radiologist's report concluded that the osteochondroma did not display characteristics consistent with those of a malignant tumour.

Operative Procedure

Patient was posted for surgical excision of exostosis after taking written informed consent and induction was done with spinal anaesthesia, tourniquet was attached. Intraoperatively, the incision was made over distal fibula through posterolateral approach after giving a prone position to the patient, with care taken to avoid the course of the sural nerve. The sural nerve was identified and tagged with a feeding tube. The peroneal retinaculum and tendon sheaths were incised to allow for retraction. Resection of the osteochondroma at its base performed with a chisel and bone nibbler provided an appropriate anatomical curve of the distal posterior fibula. Removal of the osteochondroma occurred in toto by means of blunt dissection. After complete excision, Bone wax was applied to the osseous resection site to aid in hemostasis and prevent subsequent regrowth. The removed bone was inspected and sizing of the specimen was done (03*02*02cm). The sample was collected for histopathology examination, pus culture and sensitivity examination and ZN staining.

Pus culture sensitivity, ZN staining report did not show any growth of organism.

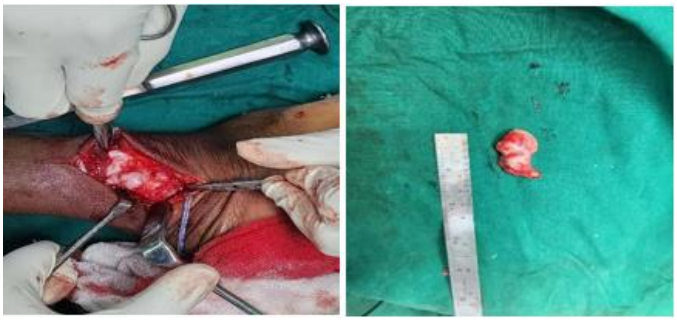

Figure: 6 & 7: Intraop Photo of Dissection and Exostosis After Excision

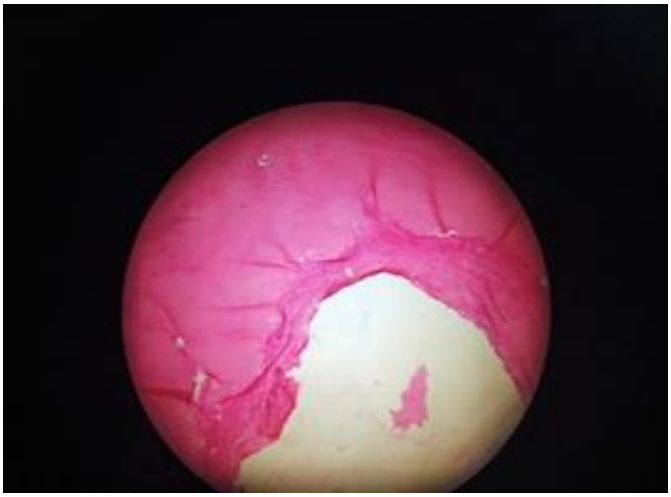

Figure 8: Histopathology Slide Showing Cartilaginous Cap s/o Osteochondroma.

Post-Operative Period

Post op period was uneventful. The patient was given below knee slab for 6 weeks with controlled weight bearing in a sequential manner. No instability was noted in evaluation of right ankle joint postoperatively. Range of motion of Patient's ankle was unrestricted, and with complete dorsiflexion and plantar flexion in immediate post-operative period without any neurological deficit.

During 6 weeks follow up examination, patient had complete resolution of pain and was walking and running without any support and discomfort.

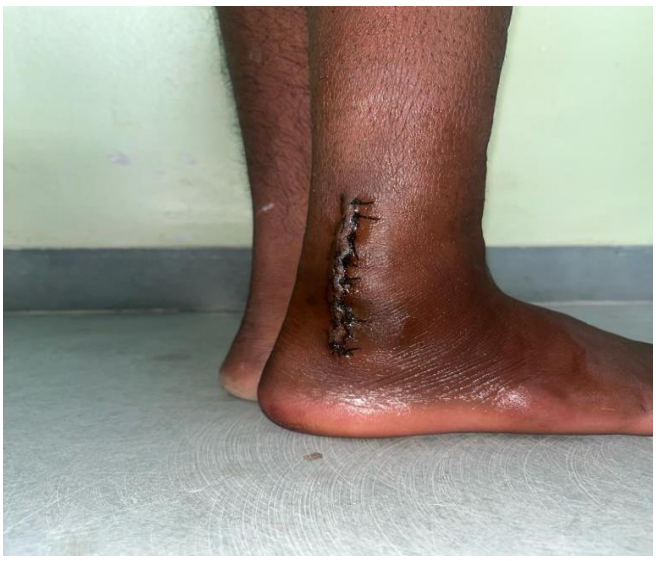

Figure 9: Suture Site After 14 Days

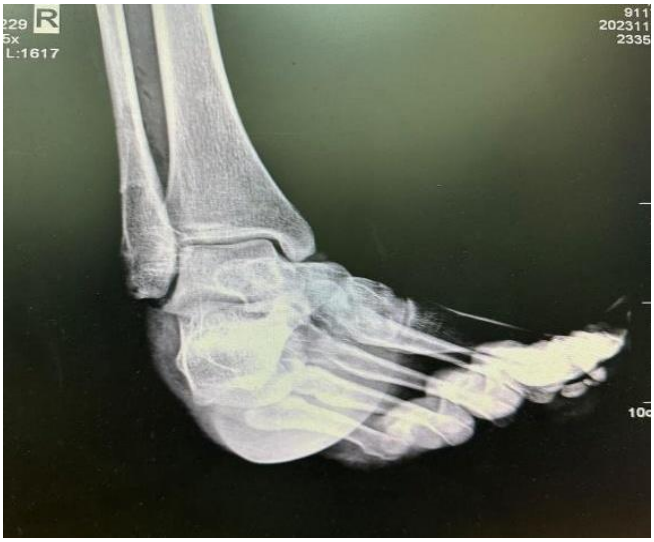

Figure 10: Post-operative X-ray s/o Complete Excision of Exostosis.

Discussion

Osteochondromas present most commonly between 20 and 30 years of age. They are often asymptomatic or may be detected as an incidental radiographic finding. Osteochondromas may be painful due to pressure on adjacent muscles, tendons, or nerves[6]. Incidentally discovered osteochondromas in asymptomatic patients are managed with observation. The patient should be informed of the rare possibility of malignant change (<1%) and should return for evaluation if the lesion becomes larger or painful[5]. Resection is indicated for patients with a symptomatic lesion secondary to irritation of the surrounding soft tissue, for a lesion in a location that is subjected to minor trauma, for a lesion causing a cosmetic deformity or potential damage to surrounding joints or neurovascular structures, and for a lesion that has characteristics of malignant transformation. If possible, resection of an osteochondroma in a child should be postponed until skeletal maturity because the cartilage cap will become smaller and will be farther from the growth Plate.[7] Surgical treatment of osteochondromas consists of simple excision with cap removal. Mirra reiterated the importance of complete resection of the cartilaginous cap to prevent recurrence[5]. Anterior, posterior and trans-fibular approach can be used depending upon the location of exostosis[8]. In this case, we used the posterolateral approach for resection of the exostosis but the anterior approach is associated with the least amount of postoperative morbidity[8].

Traditional radiographs may be capable of generating adequate diagnostic evidence to guide surgical excision of benign and symptomatic tumours. A three-dimensional computed tomographic interpretation may have proven beneficial in illustrating the extent of the osseous growth in this report; however, MRI was the advanced imaging modality of choice to gauge the proximity of the neurovascular bundle and to assess the cartilaginous cap of this suspected osteochondroma[9]. Regardless of preoperative diagnosis, all excised tumours should be sent for pathologic evaluation after excision to confirm the diagnosis and rule out malignant

potential. Iatrogenic injury to the sural nerve is a regularly encountered complication of lateral ankle and foot operations, with reduced potential following meticulous dissection[10].

Conclusion

While the majority of paediatrics osteochondromas should be managed conservatively until their skeleton matures, those that affect the distal tibia or fibula should undergo surgical excision to prevent deformity of the ankle, syndesmotic lesions, or even fracture because of the benign tumor's tendency to grow rather than the observation.

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