

Case Report

Large osteochondroma excision from distal radius

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ABSTRACT

Osteochondroma is a common benign bone tumor, originating within the periosteum as a small cartilaginous nodule. The distal femur, the proximal tibia, and the proximal humerus are the most common locations and the majority of these lesions cause no symptoms and are discovered incidentally. We present a rare solitary large (approx. 11 cm long) osteochondroma originating from the ventral aspect of the distal end of the radius with mechanical restriction of movement of the wrist joint in an 8-year-old female patient. The biopsy is suggestive of benign chondro-osseous neoplasm favoring the diagnosis of osteochondroma. Surgical intervention with the excision of the osteochondroma of the distal radius was performed and thereby the symptoms showed a complete resolution.

Keywords: Large osteochondroma, Distal end of radius, Mechanical restriction

INTRODUCTION

Osteochondromas being surface bony lesions are composed of both medullary and cortical bone with hyaline cartilage caps usually arising from long bones' metaphysis. Osteochondroma being the most common benign bony tumor, accounts for nearly 20% to 50% of all benign bony tumors and 10% to 15% of both malignant and benign bony tumors.¹ The usual occurrence is within the first four decades, with 75% arising before the age of 20 years, showing a male predominance; 50% being located around the knee. The etiology is unknown. The majority of osteochondromas are being diagnosed incidentally as they are mostly symptomless.² The second most common symptom is a painless palpable lump. Moreover, osteochondroma may compress adjacent structures. Other symptoms include fracture, bursitis, or malignant transformation, the most dangerous complication, which occurs within the cartilage cap leading to the development of secondary chondrosarcoma. It may also cause distal neurovascular deficit. Osteochondroma usually diagnosed radiographically suggests marrow and cortical continuity between the

lesion, parent bone, and a cartilage cap. Most lesions are solitary, but approximately 15% have multiple tumors like multiple osteochondromas or multiple hereditary exostoses (HME), being a rare genetic autosomal dominant disorder, which is caused by heterozygous loss of function mutations in EXT-1 and EXT-2 genes.^{3,4} Lesions with no or subclinical symptoms usually require just observation while the ones with symptoms require surgical intervention which includes complete resection by removing the overgrowing bone from the base, cartilage cap, and perichondrium, to decrease the risk of relapse.⁵

Here we are presenting a rare case of 8-year old female with large sessile osteochondral at the distal end of radius with mechanical restriction treated with en bloc resection and rehabilitation.

CASE REPORT

An 8-year old female presented with swelling over the volar aspect of the right-sided distal forearm since birth gradually progressive in nature with a decrease in wrist range of motion with difficulty in day-to-day activity

without a history of any trauma and negative family history. On examination, the right-sided distal forearm swelling (Figure 1) at the volar side was single, around 11×7×5 cm³ in size, irregular in shape (cauliflower) and edges, bony hard, non-tender, fixed to underline structure with intact skin leading to a decrease in the range of motion of the wrist joint and a decrease in supination and pronation of the forearm; without distal neurovascular deficit.

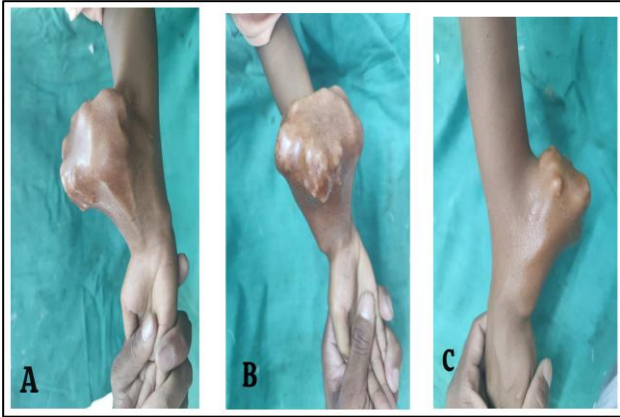


Figure 1 (A-C): Clinical picture of swelling over the ventral aspect of the distal forearm.

X-ray of the bilateral wrist with forearm anterior-posterior and lateral view (Figure 2) suggested a well-defined expansile lobulated sessile bony outgrowth noted involving the distal end of radius which is seen communicating with a medullary cavity that produces broad and blunt metaphysis of radius.



Figure 2: Radiograph of Right wrist with forearm showing tumor in different views.

In the biopsy, there are lobules of mature osteocytes and chondrocytes with lacuna (Figure 3). Zone of mineralization with no evidence of malignancy which is suggestive of benign chondro-osseous neoplasm favors osteochondroma.

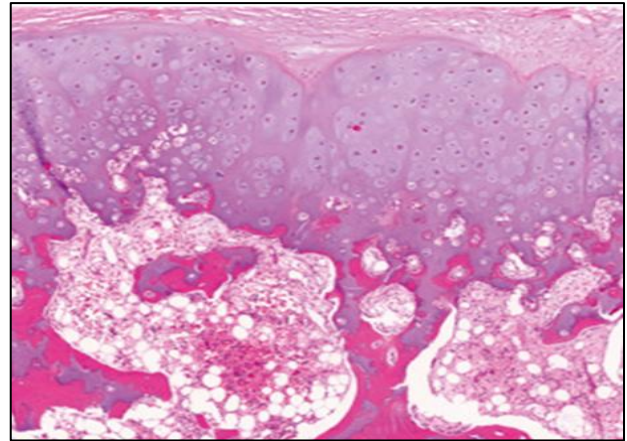


Figure 3: Histopathological slide of osteochondroma.

After clinical, radiological and histopathological confirmation, we planned surgical intervention involving excision of the osteochondroma using a dorsal approach to the distal end of the radius. General anesthesia was given followed by a longitudinal incision over the dorsal aspect of the wrist, and meticulous dissection was performed to expose the osteochondroma; revealing the mass effect of osteochondroma over the adjacent muscles with significant edema. The tumor mass was dissected from the surrounding soft tissues and then sent for histopathological examination. The closure was done in layers, and an above-elbow slab was given for 6 weeks to prevent a pathological fracture. Post-operative skiagrams of the operated region confirmed the complete removal of the tumor with tumour-free margins. Histopathological examination confirmed the diagnosis of osteochondroma. At 1-year follow-up, the patient was symptom-free with no complications post-surgery.

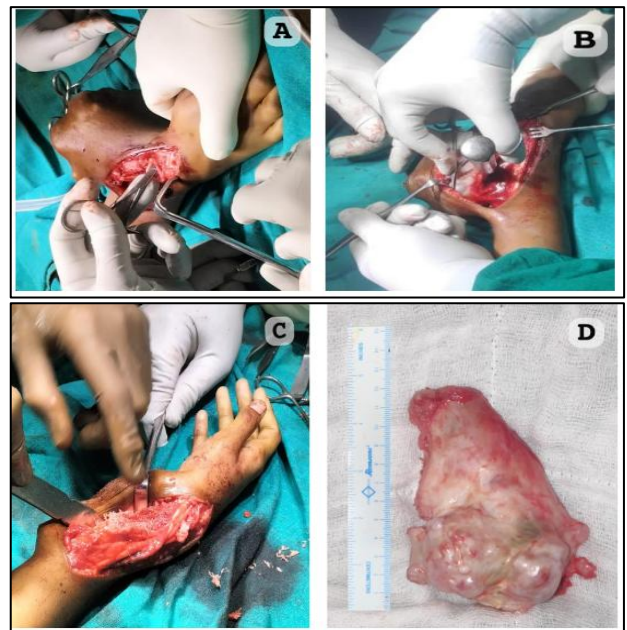


Figure 4 (A-D): Intraoperative photograph of excision of an osteochondroma.



Figure 5 (A and B): Post-op X-rays and local part photo.

DISCUSSION

Osteochondroma most commonly involves the femur (30%), with distal lesions more common than proximal lesions. The second most common long bones to be affected are the tibia and humerus each constituting 10% to 20% of cases. In the current patient, the presentation of osteochondroma is a rare one with the involvement of the distal radius.^{1,2} Osteochondromas are usually asymptomatic and discovered incidentally on radiographs. In our case patient presented with large bony hard swelling around the wrist joint with restriction in movement.^{1,2,6} The age group of 10-20 years with male sex predilection but we found it in the 8-year female which is earlier than the usual presentation.⁷ Osteochondromas grow outward from the line of a bone and size is between 1 and 10 cm mostly, we found sessile growth larger than usual size.⁵ Other than a detailed history and a full clinical examination, radiological investigations are required for the diagnosis of osteochondroma which suggests cortical and marrow continuity between the lesion and the parent bone and the cartilage cap. Osteochondroma, mostly diagnosed by skiagrams, is located at the metaphysis of long bones.⁸ In Macroscopic appearance the lesion surface is lobulated and has an abundant cartilaginous cover (Figure 4).^{1,8} In this presentation removed tumor is 11×6×4 cm³ size which is larger than the usual presentation. Complete resection by removing bony overgrowth from the normal bone base, with consequential removal of the cartilage cap and perichondrium was done which is necessary to minimize the risk of relapse. In the case of malignancy, en-block resection of the lesion with a tumor-free margin should be carried out to decrease further relapse.

CONCLUSION

Osteochondromas are very commonly presenting benign tumors but in common sites and are generally

asymptomatic. The purpose of presenting this rare case is, in our case location of the tumor is the volar aspect of the distal radius; patient presented with symptoms like swelling and restriction of movement, age of presentation is also less than the usual age of presentation, the size of the tumor is larger than usual. So, we would like to conclude the study stating that osteochondromas, although uncommon in a lot of sites and mostly asymptomatic, can still manifest in any site, with symptoms, in younger age people and in any size.

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