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Case Report

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Osteochondroma of the medial border of the scapula: a rare case report

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ABSTRACT

Osteochondroma is the most frequently encountered benign bone tumor. It is characterized by a bony protrusion with a hyaline cartilage cap covering it, and it is often referred to as an exostosis. The pathognomonic features of osteochondroma are the presence of both medullary and cortical bone with continuity with the parent bone, which helps in diagnosing the tumor. The most common sites of osteochondromas are the metaphysis of long bones. But the scapula is a rare site of occurrence for an osteochondroma. Radiographic imaging, preferably with MRI or CT, helps confirm the benign nature of the tumor. However, a definitive diagnosis requires a biopsy and histopathological examination. Often, open surgical resection is the definitive treatment modality.

Keywords: Osteochondroma (D015831), Scapula (D012540), Benign bone tumor (D001859)

INTRODUCTION

Osteochondromas represent the most common primary bone tumor, constituting around 25-40% of all benign bone tumors. Common locations include the proximal tibia, the proximal humerus and the distal femur. Osteochondromas are not so common on flat bones.[1] They arise mostly in the metaphysis and diaphysis and project as an outgrowth of bone from the cortical surface. Hence, they are often referred to as exostosis. They are cartilage-capped exophytic lesions containing a marrow cavity that is continuous with the parent bone and grows away from the physis. The cartilaginous cap is the region of growth, which generally ceases after skeletal growth maturity.

Osteochondromas develop when a portion of the epiphyseal growth plate's cartilage separates and herniates through the periosteal bone surrounding the growth plate.[2] Hence, they are more of developmental lesions rather than real neoplasms. They are frequently detected inadvertently due to their asymptomatic nature. Malignant transformation is rare and is most commonly associated with hereditary exostosis.

Osteochondromas are the most common radiation induced benign bone tumor in children. However, Osteochondromas of the scapula are rare, making up approximately 3-5% of all. However, it is the most common benign bone tumour of the scapula, constituting 14.4% of all the tumours.[3]

CASE REPORT

A 10-year-old female child presented to our outpatient department with complaints of swelling in the left upper back region. Swelling was initially noticed by her mother when the child was 5 years old, and the swelling gradually increased in size. Patient didn't complain of any pain or any decreased range of motion of the left shoulder or any difficulty in weight bearing. No history of similar complaints in any other family members.

Physical examination revealed a well-defined, round, non-tender mass, which was bony hard in consistency, 5×4×4 cm in size, over the dorsal scapular region. The overlying skin condition was normal. There was no sign of winging of the scapula. Neurological examination of both upper limbs was normal.

Work up and imaging

Radiological investigations include X-ray of the left shoulder with scapula in AP view and Axillary view which showed a bony growth on the medial border of the scapula (Figure 1). A CT scan of the left shoulder was performed to further delineate the tumor and thickness of the cartilaginous cap (Figure 2 and 3).

CT scan report showed-A well-defined dense calcified expansile growth lesion measuring 4.7×3.6×3.7 cm (TR×AP×CC) noted in the posteromedial aspect of the left scapula with no significant periosteal reaction and features suggestive of osteochondroma.

FNAC of the mass shows cytological features suggestive of benign cartilaginous tumor-possibly osteochondroma.

All the investigations and imaging were consistent with the benign bone tumor. As the tumor is gradually increasing in size, posing cosmetic concern and risk for neurovascular compromise and pathological fracture, treatment options were discussed, and surgical excision of the lesion was opted. Informed and written consent was obtained.

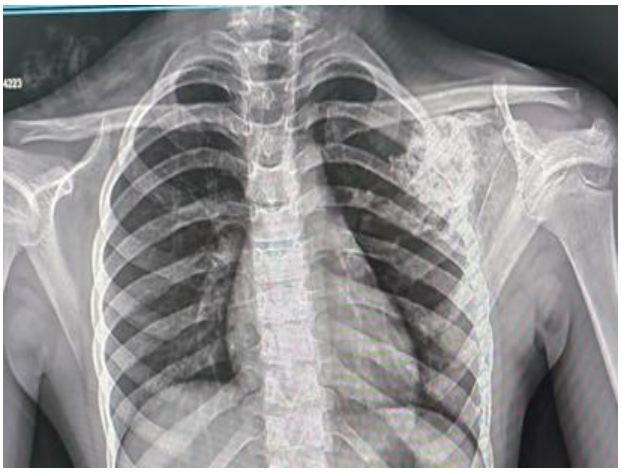

Figure 1: Pre-operative radiograph chest AP view.

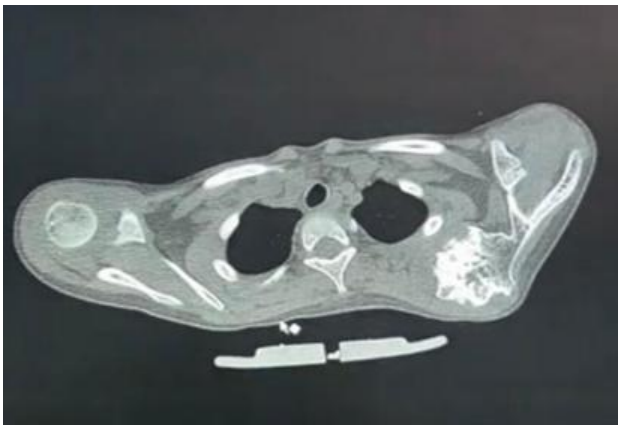

Figure 2: Pre-operative NCCT chest (transverse section).

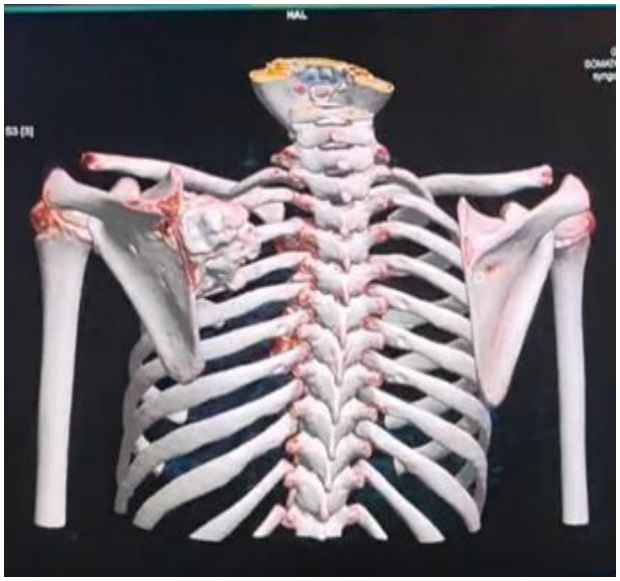

Figure 3: Pre-operative NCCT chest (3D reconstruction).

Surgical technique

After opting for surgical excision of the tumor with safe margins, routine investigations and preanesthetic checkup were done. Under general anesthesia patient was placed in the lateral decubitus position. The left shoulder, arm and upper back were thoroughly scrubbed, painted and draped under sterile conditions.

By following the modified Judet approach, a skin incision was made starting at the posterior corner of the acromion, running along the spine of the scapula, over the mass and curving down on the medial border of the scapula. After elevating the skin, the posterior border of the deltoid and trapezius muscles were elevated to expose the infraspinatus muscle.

Rhomboid major and minor muscles were detached from the medial border of the scapula, and the tumor was exposed (Figure 4). Excision of the tumor was done from the base with an osteotome. The entire cartilage cap was removed, and the edges were smoothed with a rasp. Tumor en-bloc excision achieved with safe margins (Figure 5). The specimen measuring 5×6 cm was sent for histopathological examination (Figure 6). The rhomboids were reattached to the medial border of the scapula. Wound closure done in layers (Figure 7). Sterile dressing done. Post op recovery was uneventful. An arm sling was given for 2 weeks. Suture removal was done on the 10th post op day. Early passive ROM exercises were started.

HPE report confirmed that the specimen was an osteochondroma with no signs of atypia or malignant transformation and normal underlying trabecular bone. Patient was followed up regularly, and full active ROM of the left shoulder was achieved by 6 weeks. Follow up x rays and CT showed no evidence of residual tumor.

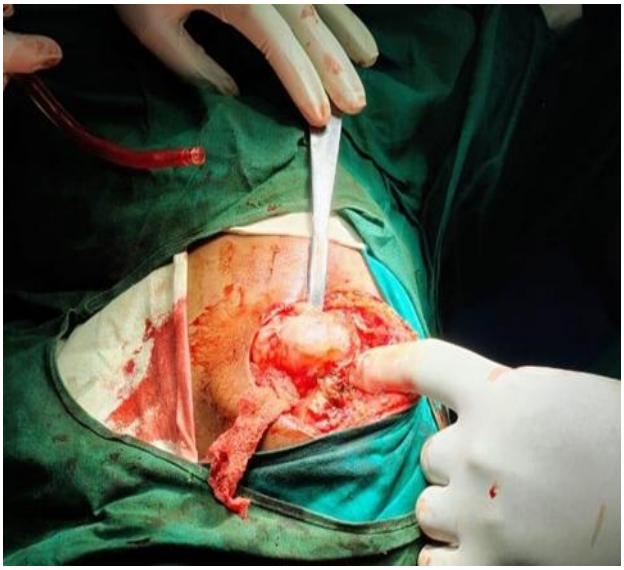

Figure 4: Exposure of the tumour.

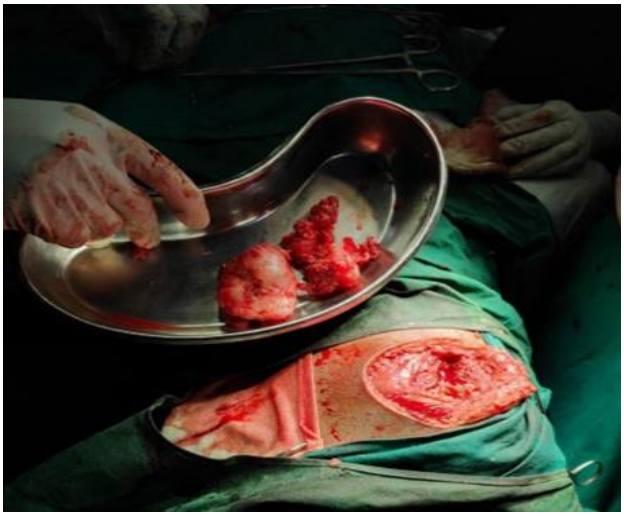

Figure 5: Resected tumour in two blocks.

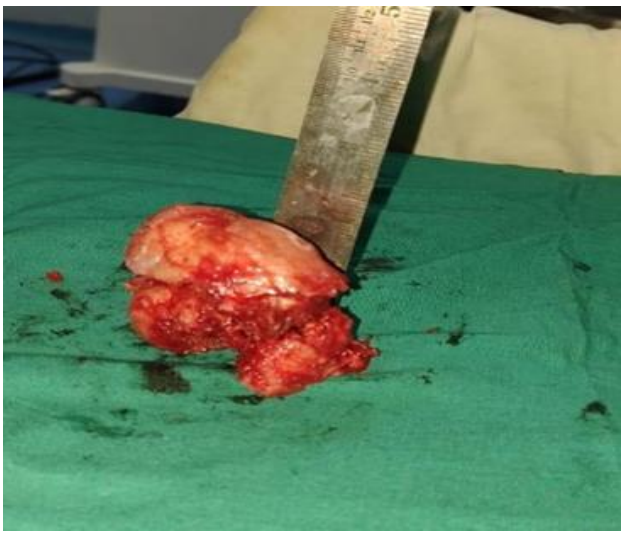

Figure 6: Whole tumour dimensions.

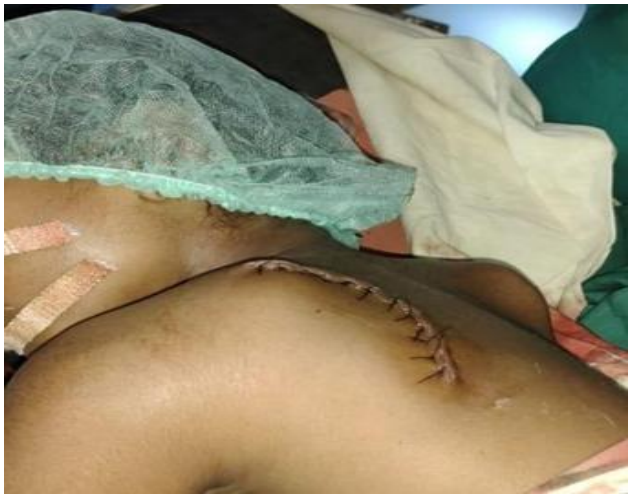

Figure 7: Closure of incision.

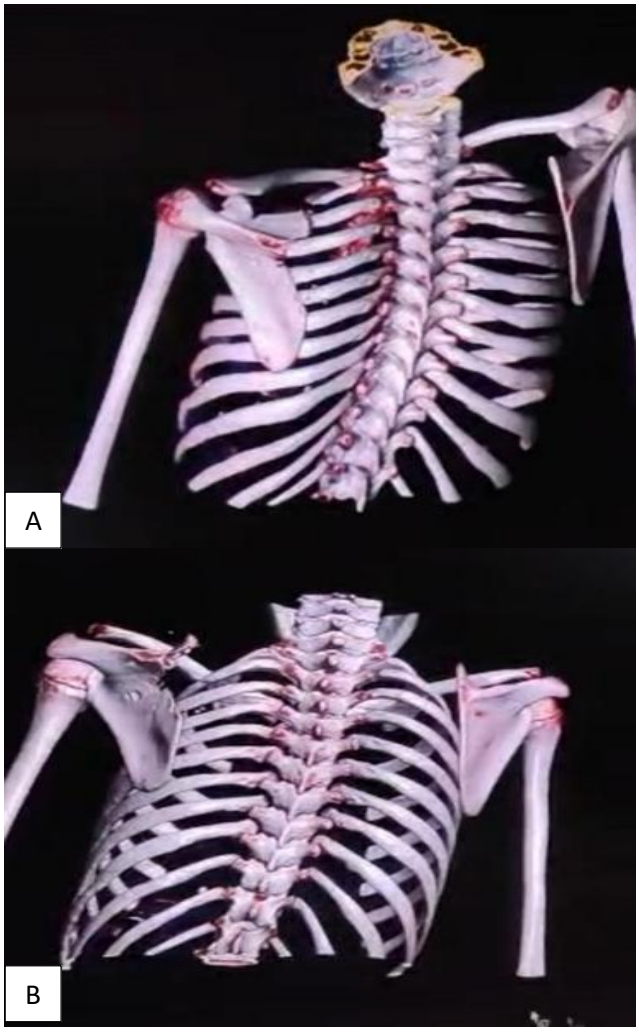

Figure 8 (A and B): Post op NCCT Chest (3 D view).

DISCUSSION

Osteochondromas make up 24-40% of all benign bone tumours, making them the most prevalent primary bone tumour.[4] They rarely occur on flat bones, but they

frequently affect the knee, pelvis, and proximal humerus.[5] The basis for classification is the base's morphology, which can be classified as sessile (wide-based) or pedunculated (with a stalk, growing away from the epiphysis). Pedunculated variants are less prevalent than sessile ones. These are often asymptomatic, painless, slowly expanding masses, although they can occasionally cause pain when they compress adjacent neurovascular systems or obstruct joint motion. Lesion growth typically follows an individual's growth, with a lesion growing quickly in tandem with a child's development. An osteochondroma rarely grows significantly after skeletal maturity. However, some exostoses can continue to grow into the third decade of life without becoming malignant.[6] Malignant transformation to osteosarcoma or chondrosarcoma is possible, despite the lack of metastatic potential.

Malignant transformation is more common in people with EXT1 mutations than in those with EXT2 mutations, occurring in 1-2% of solitary lesions over the course of a lifetime.[7] New cortical irregularities, continued growth after skeletal maturity, bony destruction, back growth of the cartilaginous cap into the stalk or medullary canal, lysis of calcifications in the cap, focal areas of radiolucency inside the lesion, and a large soft tissue mass are all indicators of malignant transformation on radiography.[8] It is crucial to understand that skeletal maturity has a significant impact on cartilage cap size. Increased cap size is known to be a marker of active growth in skeletally immature individuals and should not be interpreted as an indication of malignant transformation. Pain, swelling, uneven borders, and an increase in the size of the tumour, especially following a period of dormancy, are clinical indicators associated with malignant transformation.[9] Since the ilium, scapula, and pubic rami are the most common locations linked to malignant transformation, osteochondromas in these areas should raise concerns about their potential for malignancy.[7]

Osteochondroma of the scapula is a rare tumour. It constitutes 14.4% of all the tumours of the scapula, with the ventral surface being the more common site of presentation than the dorsal.[10] Larger lesions tend to be situated in the inferior aspect of the scapula due to a lack of space restriction. A painless bony mass is the most commonly reported symptom, as presented in our case, but pain, if at all present, is mostly due to the mass effect of the tumour on the surrounding tissue. A wide range of other presentations includes a decreased range of motion, nerve impingement, underlying bursitis, fracture of the stalk of the tumour, and “pseudo-winging” of the scapula.[11] Snapping scapula syndrome, which is a syndrome of painful, audible, and/or palpable abnormal scapula thoracic motion, can develop when the osteochondroma presents on the anterior surface of the scapula, especially in adolescence or early adulthood.[12] Osteochondromas of the ventral surface of the scapula lead to potential problems like bursa formation, pseudo-winging of the scapula, snapping syndrome, and restricted movements of the shoulder, most of which are relieved by excision of the tumour.[13] Osteochondromas are usually not difficult to diagnose clinically, but confirmation is a must by histopathological studies of the biopsy taken. Radiographic studies such as X-ray and CT scan are essential for isolating the location of the mass and planning a surgical approach.[14] The only definitive of osteochondroma is en bloc excision of the tumour. We presented the case of a 10-year-old girl with a large osteochondroma of the medial border of the scapula for which en bloc excision was done, and histopathology showed no signs of malignant transformation.

CONCLUSION

Benign bone tumours called osteochondromas, which originate from the growth plate, usually affect long bones like the femur or humerus. However, they can also occasionally appear in the scapula. They frequently cause snapping scapula syndrome, which is characterised by audible or palpable crepitus and pain from rubbing on the rib cage, when they are located in the ventral part of the scapula. On the other hand, dorsal osteochondromas on the scapula are less prevalent but, depending on their size, can still cause problems. Large dorsal osteochondromas can compress surrounding structures, limit movement, or cause pain. Imaging tests, including MRIs, CT scans, and X-rays, are typically used for diagnosis in order to see the distinctive bony development.

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