Case Report

Rare Presentation of Dorsal Scapular Osteochondroma in a Young Patient: A Case Report

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ABSTRACT

Background: Osteochondromas are the most common benign bone tumors, comprising 35%–46% of all benign bone neoplasms. They predominantly arise in the metaphyseal regions of long bones, with the scapula being a rare site of occurrence, accounting for only 3–6.4% of cases. Dorsal scapular osteochondromas are particularly rare, with limited documentation in literature. Although often asymptomatic, symptomatic cases require surgical excision to prevent complications such as pain, mechanical irritation, or malignant transformation. **Case Report:** We report the case of a 10-year-old male who presented with a one-year history of a painless, progressively enlarging mass on the dorsal aspect of the right scapula, causing cosmetic concerns and discomfort in the supine position. Physical examination revealed a firm, mildly tender, well-defined bony mass measuring 4 × 3 cm over the medial spine of the scapula. Radiographic imaging and histopathological evaluation confirmed the diagnosis of osteochondroma without evidence of malignancy. The tumor was surgically excised using a muscle-sparing technique, achieving complete removal of the lesion. Postoperative recovery was uneventful, with excellent pain relief, full range of motion, and no recurrence at three-week follow-up. **Conclusion:** This case highlights the rarity of dorsal scapular osteochondromas and underscores the importance of early diagnosis and surgical management in symptomatic cases. A muscle-sparing technique proved effective in minimizing recovery time and optimizing functional outcomes. The report adds valuable insight into the clinical and surgical management of this rare presentation, emphasizing vigilance for complications such as malignant transformation.

Keywords: Benign bone tumor, case report, osteochondroma, scapula (dorsal), surgical

INTRODUCTION

Osteochondromas or exostoses are the most common benign tumors of bone. They account for 35–46% of all benign neoplasms of bone.[1] About 90% occur in the metaphysis of the tibia, humerus, and distal femur.[2,3] The incidence of osteochondroma under the age of 30 is higher in men compared to women.[4,5]

These tumors typically develop in the metaphyseal regions of long bones in children and adolescents, with their growth usually ceasing upon skeletal maturity.[2]

Flat bones, including the scapula, represent approximately 3–4.6% of all osteochondroma cases, with 14.4% of scapular tumors identified as osteochondromas.[6,7] Among these, lesions occurring on the dorsal surface of the scapula are particularly uncommon, as the majority of scapular exostoses are found on its ventral aspect.[8,9] Limited data are available in the literature concerning osteochondromas located on the dorsal aspect of the scapula.

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Osteochondromas are benign bone lesions composed of both medullary and cortical bone, capped by hyaline cartilage. A defining diagnostic feature is the continuity of the lesion's medullary and cortical bone with that of the underlying bone, which is considered pathognomonic.[10-13] These lesions originate when a fragment of cartilage from the epiphyseal growth plate becomes displaced, protruding through the periosteal bone cuff that encircles the growth plate.[11,14-17]

As per the World Health Organization classification, osteochondromas are described as cartilage-capped bony projections arising from the external surface of bone.[11] While primarily composed of bone, their growth occurs through endochondral ossification of the cartilaginous cap.

Clinically, some patients may experience pain secondary to mechanical pressure on adjacent structures, fracture of the tumor's stalk, neurovascular compression, bursal formation, or, in rare cases, malignant transformation of the cartilaginous cap.

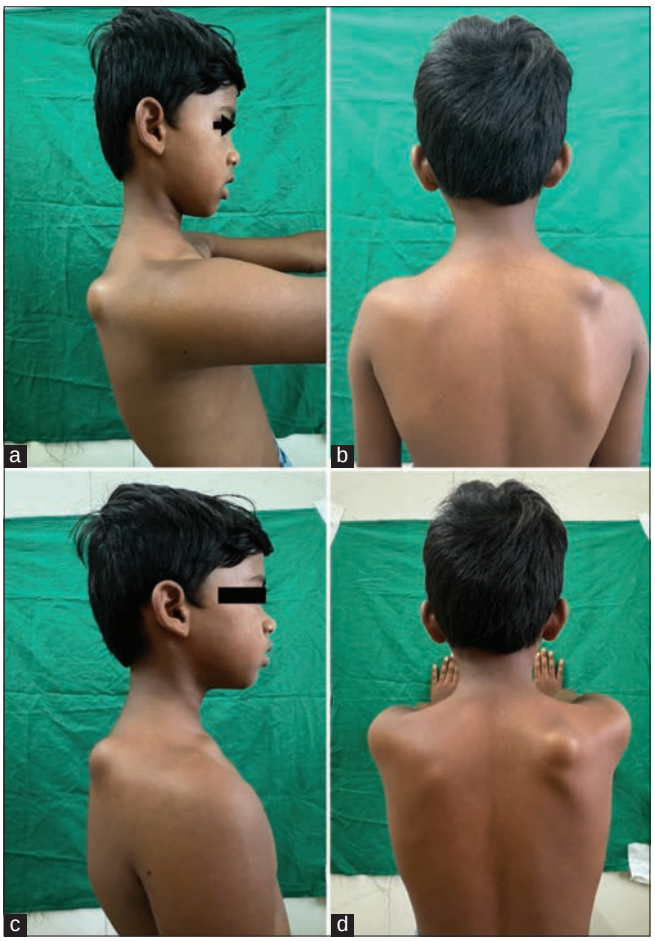

Figure 1: (a-d) Clinical photograph showing swelling over the dorsal aspect of the right scapular

Surgical excision is typically reserved for symptomatic lesions under these circumstances.[18,19] However, literature detailing the surgical management of symptomatic scapular exostoses remains sparse.[20,21]

Here, we present a rare case of a dorsal scapular osteochondroma in a young male patient presenting with localized pain. This case has been reported in accordance with the SCARE criteria.[22]

CASE PRESENTATION

We report the case of a healthy 10-year-old right-handed male who presented in our outpatient department with complaints of a painless protrusion on the right side of his upper back for the past 1 year. Although the protuberance was first noticed by the patient's mother at age 9, no management was instituted till now. There was no notion of trauma or fever. The patient was otherwise healthy with no pertinent family history. He reported that his main reasons for visiting were cosmesis and pain, especially in the supine position.

On physical examination, a well-defined round mass was seen on the dorsal aspect at the medial region of the spine of the right scapular blade which was a uniform, rounded, bony prominence on palpation and measuring 4 × 3 cm although there was mild tenderness to palpation there was no evidence of winging of the scapula [Figure 1].

A full range of motion was found in both shoulders.

No limitation in the shoulder and scapulothoracic joint's range of motion was appreciated.

Neurovascular structures were intact on examination of both the upper limbs.

Radiographic Evaluation

X-rays showed a bony growth on the dorsal aspect of the medial margin of the right scapula [Figure 2].

Computed tomography revealed a bony outgrowth 23 × 19 × 22 mm over the dorsal aspect of the right scapula, just above the root of the acromion spine-pedunculated osteochondroma [Figure 2].

Magnetic resonance imaging (MRI) revealed a lobulated lesion on the T2-weighted images measuring 23 × 20 mm at their maximum lengths on the posterosuperior aspect of the superior border of the right scapula [Figure 2]. The cartilage cap thickness is 3 mm-bony exostosis along the posterior and superior border of the right scapula.

The imaging results were consistent with the characteristics of a benign bone tumor. Although

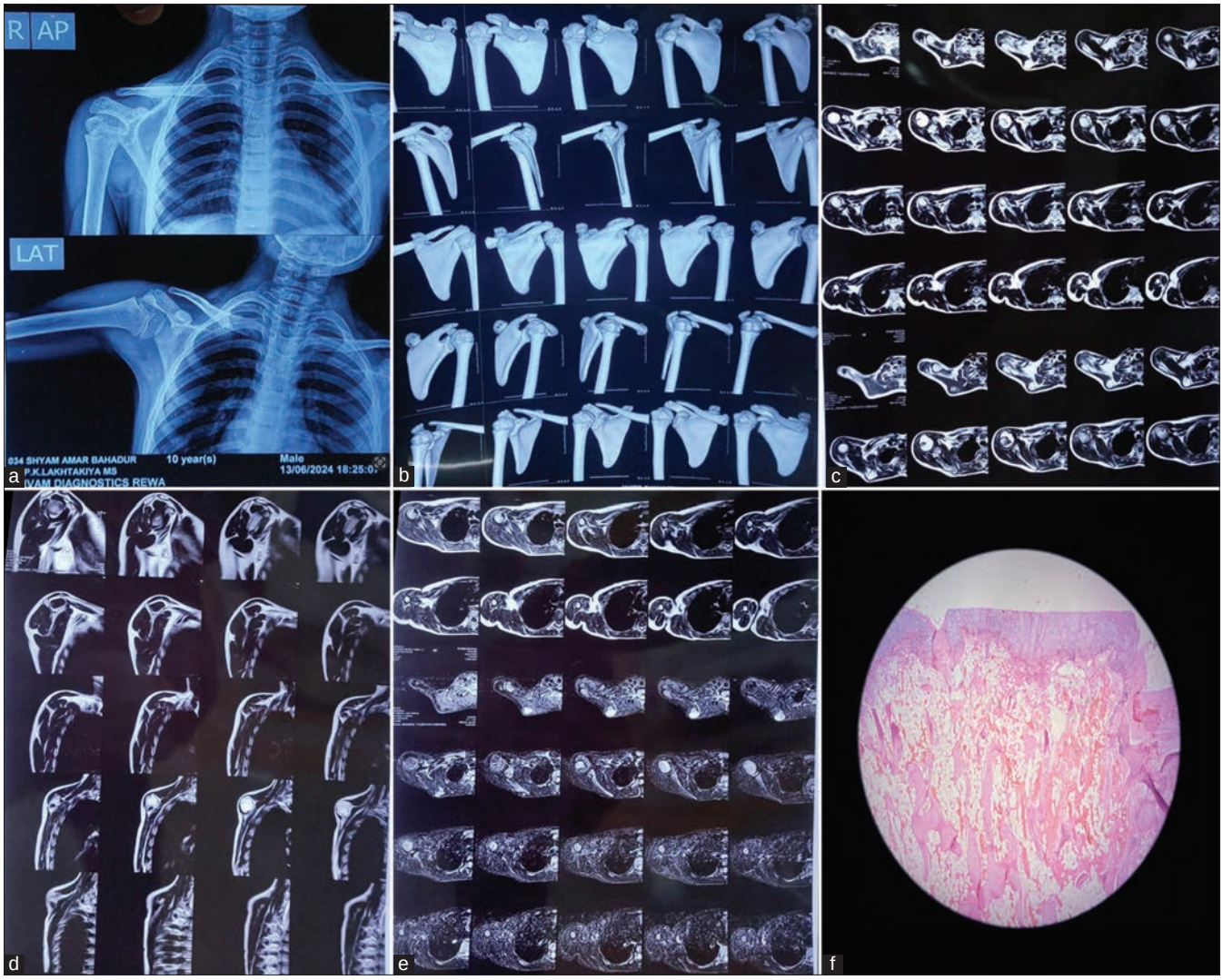

Figure 2: (a-e) Investigations. (a) X-ray showing bony outgrowth on the dorsal aspect of the right scapula in AP and lateral view. (b) 3D CT scan (Reconstruct) revealing a pedunculated bony lesion on the dorsal aspect of the right scapula. (c-e) MRI showing a lobulated lesion with a cartilage cap (3mm thick) on the dorsal scapula, consistent with osteochondroma. (f) Histopathological image showing a cartilage cap and enchondral ossification.

benign bone tumors such as enchondroma, fibroma, chondroblastoma, osteoid osteoma, osteoblastoma, and periosteal chondroma were considered in the differential diagnosis, the radiographic appearance of a solitary osteochondroma was pathognomonic. Imaging showed a bony outgrowth involving both the cortical and medullary layers, which confirmed the diagnosis.

There were no signs of malignant transformation.

Histopathology

The histopathological section of the tumor shows a well-formed cartilage cap on the surface with a prominent endochondral ossification at the base, which continues into the trabeculae of mature lamellar bone.

Histology confirmed the diagnosis of osteochondroma with no evidence of malignancy [Figure 2].

Surgical Procedure

Under general anesthesia, the patient was positioned prone [Figure 3]. A transverse incision was made directly over the mass along the spine of the right scapula. Sharp dissection was performed down to the fascia of the trapezius muscle. Following fascia

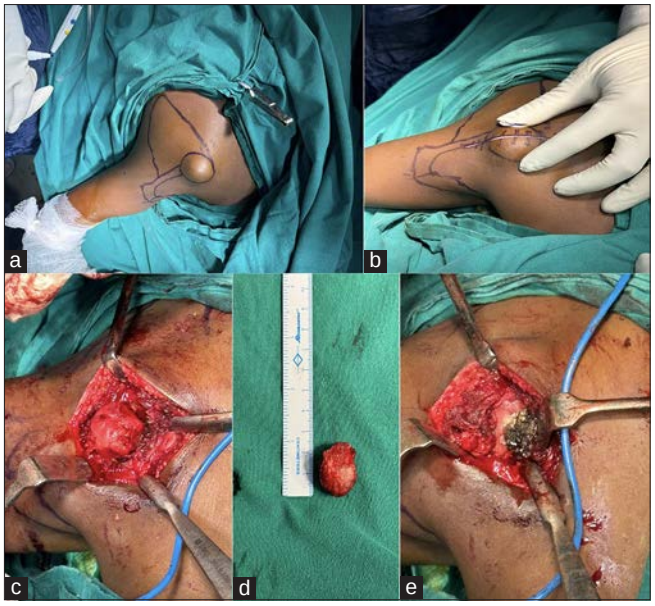

Figure 3: (a-e) Intraoperative photos. (a) Position of patient (PRONE), (b) Transverse incision, (c) Exposure of exostosis, (d) Resected osteochondroma (EXOSTOSIS), (e) Post resection image showing site after excision.

division, the trapezius muscle was retracted cranially along its fibers, and subperiosteal dissection was carried out to fully expose the exostosis [Figure 3]. The bony stalk was excised flush with the scapular surface using a surgical saw, ensuring complete removal. The excised specimen measured 2.5 × 2.5 cm [Figure 3]. The muscle layers were allowed to reposition naturally, and thermal cauterization was performed, followed by layered wound closure.

Histological evaluation of the excised specimen reconfirmed the diagnosis of osteochondroma without any malignant changes.

Post-operative Care and Follow-up

The patient was placed in a sling for comfort for 1 week postoperatively. Early shoulder range of motion exercises were initiated as tolerated. Pain relief was excellent, with complete resolution of deformity and restoration of full, pain-free shoulder movement by the 3rd post-operative week [Figure 4].

The patient was followed up regularly in the clinic, and serial radiographs demonstrated no signs of recurrence [Figure 4]. To date, there has been no evidence of recurrence, and the patient continues under periodic clinical and radiological surveillance.

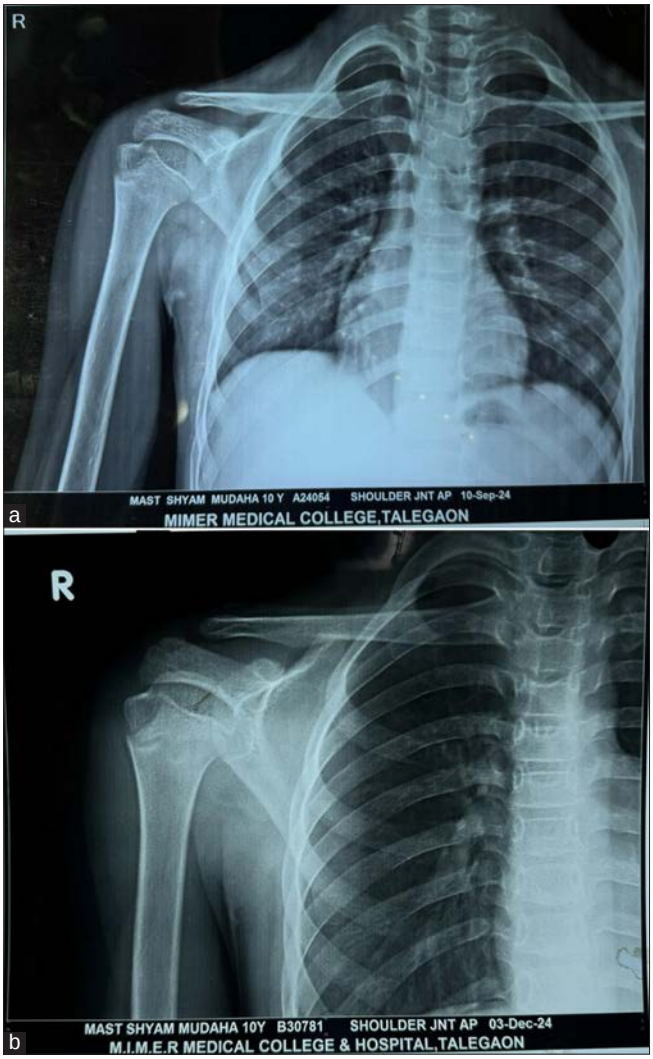

Figure 4: (a,b) Post OP X-ray. (a) Postoperative X-ray showing complete excision of the dorsal scapular osteochondroma with no residual bony lesion, (b) Follow up X-ray.

DISCUSSION

The scapula is an unusual site for osteochondroma, with a reported incidence of 3–4.6% compared to long bones. As noted previously, osteochondromas of the scapula account for 14.4% of all bone tumors occurring in the scapula. Our case involved a dorsal surface scapular osteochondroma, which is even more rare, considering the higher incidence on the ventral surface.

It arises from the growth of cartilage through a defect in the periosteum, primarily affecting bones that undergo endochondral ossification.

Typically, osteochondromas are managed surgically after skeletal maturity to minimize the risk of growth plate injury during excision.[23,24] As longitudinal bone growth progresses, these lesions tend to migrate from the metaphysis toward the diaphysis, naturally distancing themselves from the growth plate and thereby reducing the likelihood of surgical damage to this critical region.[24]

Osteochondroma of the scapula, while rare, presents distinct challenges as its symptoms largely depend on the size and location of the lesion, with issues such as pain, discomfort, mechanical irritation of muscle, tendon or soft tissue, formation of a pseudoaneurysm or bursa, fracture and the risk of malignant transformation necessitating timely intervention. Diagnosing osteochondroma is typically clinical and radiologically followed by histological confirmation.[25-27] More advanced imaging modalities, such as MRI, are sometimes necessary for flat bones such as the scapula. Surgical excision remains the definitive treatment for symptomatic cases, with muscle-sparing techniques offering significant benefits, including reduced blood loss and faster recovery, particularly in settings with limited access to advanced methods like endoscopy. Surgical removal is useful in eliminating painful symptoms and discomfort, and it avoids possible malignant transformation. Although osteochondroma growth typically halts with the closure of the growth plate (physis), they are mostly asymptomatic; any continued growth into adulthood signals a potential malignancy, underscoring the need for thorough surgical removal to prevent recurrence. The prognosis is mostly good following excision; recurrence may, however, occur if the excision is incomplete. If the patient's primary concerns are cosmetic appearance and pain from scapular exostosis, surgical removal may be considered at a younger age. Our case, involving a dorsal scapular osteochondroma in an unusually young patient, and symptomatic underscores the rarity of this presentation and highlights the importance of vigilant monitoring and precise surgical intervention. By contributing to the limited literature on this topic, this case reinforces the necessity for early and strategic management to alleviate symptoms, prevent complications, and ensure optimal patient outcomes in rare presentations such as these.

CONCLUSION

This case of dorsal scapular osteochondroma in a young patient adds to the limited literature on this rare presentation and underscores the critical need for early detection and precise surgical intervention. The unusual location of the osteochondroma, combined with its symptomatic nature, highlights the importance of careful monitoring, especially given the potential risk for malignant transformation. Good clinical outcomes can be expected with surgical excision of symptomatic dorsal osteochondromas of the scapula. The successful use of a muscle-sparing surgical technique not only alleviated the patient's symptoms but also minimized recovery time, demonstrating the effectiveness of this approach in managing scapular osteochondromas. Rare locations such as the dorsal scapula can be challenging to diagnose for clinicians. This case emphasizes the necessity for clinicians to remain vigilant in identifying and addressing atypical presentations of osteochondroma, ensuring timely treatment to prevent complications and achieve optimal patient outcomes. We suggest considering osteochondroma as a potential diagnosis when evaluating swelling or pain in the bony structures of the scapular region.

Patient Consent

Written informed consent was obtained from the patient's parents.

Declaration of Competing Interest

None declared.

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