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Case Report

Uncommon Presentation of Dorsal Scapular Osteochondroma in a Young Patient: A Case Report with Literature Review

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ABSTRACT

Background: Osteochondroma is the most common benign bone tumor, accounting for 35–46% of benign neoplasms. Although the scapula is the most frequent flat bone involved, it represents only 3–6% of cases, and lesions on the dorsal surface are exceedingly rare. Symptomatic dorsal scapular osteochondromas are uncommon in adolescents and may pose diagnostic and therapeutic challenges.
Case Presentation: A 15-year-old female presented with gradually progressive pain and functional limitation of the left shoulder. Clinical examination revealed a localized, firm swelling over the dorsal scapula and difficulty in lifting objects. Radiographs demonstrated a well-defined bony outgrowth with corticomedullary continuity, while computed tomography confirmed a pedunculated lesion. Magnetic resonance imaging revealed a mass measuring 3.5 × 2.0 cm with a cartilage cap thickness of 8.8 mm, displacing the latissimus dorsi muscle (Figure 1). Given the persistent symptoms, surgical excision was performed, and histopathology confirmed osteochondroma without evidence of malignant transformation. Postoperative recovery was uneventful, with full pain relief and restoration of shoulder function.
Conclusion: Dorsal scapular osteochondroma is an uncommon site for a common benign tumor. Early recognition and timely surgical excision in symptomatic cases ensure excellent outcomes with minimal risk of recurrence.

Keywords*: Osteochondroma, dorsal scapula, cartilage cap, benign bone tumor, case report.*

INTRODUCTION

Osteochondroma is the most common benign bone tumor, accounting for 35-46 % of all benign bone neoplasms and 10–15% of all bone tumors [1]. It usually arises from the metaphysis of long bones, whereas flat bones such as the scapula are less frequently involved, representing only 3–5% of all cases [2]. Within the scapula, the ventral surface is the predominant site, while the dorsal aspect remains extremely rare, with only a handful of cases reported worldwide [3,4].

Patients may present with swelling, pseudo-winging, crepitus, pain, or positional discomfort, though many lesions remain asymptomatic and are detected incidentally [5,6]. Imaging, especially CT and MRI, plays a crucial role in flat-bone osteochondromas for delineating cartilage-cap thickness and excluding malignant transformation [7]. Surgical excision is typically reserved for cases with pain, deformity, functional limitation, or suspicion of malignant change, while conservative management may suffice in select asymptomatic pediatric cases [4,8].

Against this rare clinical background, we present an uncommon dorsal scapular osteochondroma in a young patient, emphasizing its atypical features, diagnostic approach and management considerations in light of existing literature.

CASE PRESENTAION

A 15-year-old female patient presented with a gradually progressive swelling over the left scapular region for the past 6–9 months, associated with persistent dull aching pain and discomfort while lifting objects. The swelling had progressively increased in size, and over the last few weeks, the patient reported difficulty in performing overhead activities.

On clinical examination, there was a firm, non-tender, bony swelling palpable over the scapular blade.

Plain radiography (Figure 1) of the left scapula demonstrated a bony projection arising from the scapular blade. Owing to persistent symptoms, a computed tomography (CT) scan (Figure 2) was performed, which revealed an expansile lesion continuous with the cortex and medullary canal of the scapula. For further characterization, magnetic resonance imaging (MRI) of the left scapula was performed using T1, T2, and STIR sequences (Figure 3). MRI demonstrated a well-defined osseous lesion measuring approximately 3.5 × 2.0 cm with an irregular cartilaginous cap of 8.8 mm thickness, arising from the anterior margin of the inferior scapular blade. The lesion displaced the adjacent latissimus dorsi muscle without neurovascular compression.

Given the patient's symptomatic presentation and progressive enlargement, surgical excision was planned. The lesion was removed en bloc under general anesthesia. The resected specimen (Figure 4) was submitted for histopathological analysis.

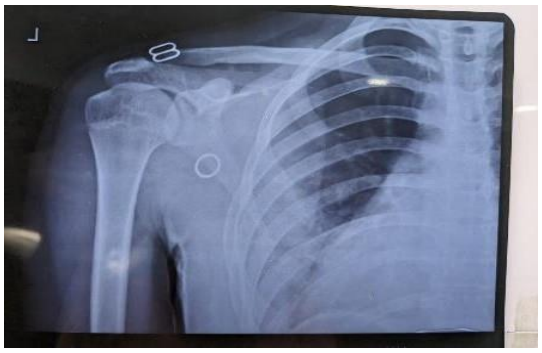
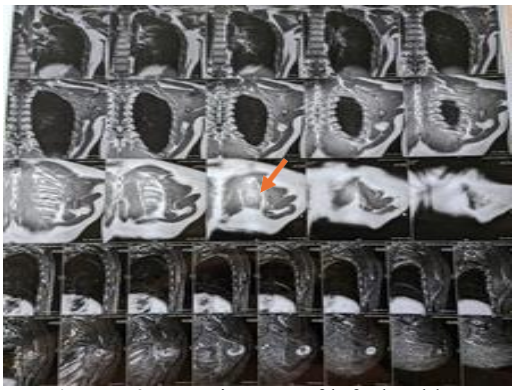
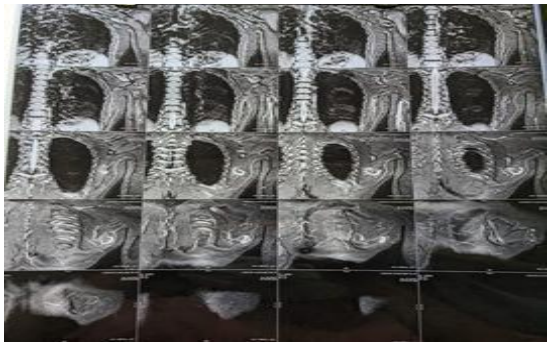


Figure 1: X-ray of left scapula showing osseous outgrowth.



Figures 2: MRI images of left shoulder



Figures 3: MRI images.

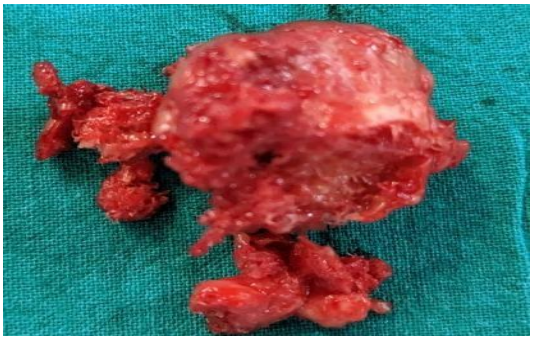


Figure 4: Postoperative specimen of excised osteochondroma.

RESULTS

Radiographic Findings: Plain X-ray (Figure 1) showed a bony excrescence arising from the inferior scapular blade, consistent with an exostotic lesion.

CT Findings: CT images (Figures 2) confirmed corticomedullary continuity with the parent bone, characteristic of osteochondroma.

MRI Findings: MRI scans (Figures 3) revealed a lobulated expansile osseous lesion with a cartilage-capped projection measuring 3.5 × 2.0 cm, and a cartilaginous cap thickness of 8.8 mm. The lesion was hyperintense on STIR sequences and displaced the adjacent latissimus dorsi muscle, without evidence of soft tissue invasion or malignant transformation.
Intraoperative Findings: A hard, lobulated mass was excised en bloc (Figures 4). Gross examination demonstrated a cartilage-capped osseous tumor.

Histopathology: Confirmed osteochondroma, showing endochondral ossification beneath the cartilage cap with no atypia.

Postoperative Outcome: Recovery was uneventful. The patient reported significant reduction in pain and regained normal shoulder mobility. Follow-up radiographs (Figure 5) confirmed complete excision with no recurrence at short-term review.

DISCUSSION

Dorsal scapular osteochondroma is a rare entity, representing only 3–6% of scapular osteochondromas, with most cases located on the ventral aspect. The present case of a 15-year-old female is unusual in that she presented with lifting-related pain and associated with a progressively enlarging swelling. Imaging confirmed corticomedullary continuity with a cartilage cap measuring 8.8 mm, larger than most pediatric cases reported in literature but still below the threshold considered suspicious for malignant change in skeletally immature bone. Complete excision achieved prompt relief of symptoms and restoration of function, with no early recurrence.

Comparison with the literature highlights both similarities and unique aspects of present case. Munde et al. (2025) reported a 10-year-old boy with a dorsal scapular lesion of 23 × 20 mm and a cap of 3 mm, presenting with cosmetic concerns and supine discomfort; muscle-sparing excision achieved excellent results [9]. Das et al. (2023) described another 10-year-old boy with a 4.8 × 4.1 × 3.4 cm lesion and a 4.6 mm cap, where en-bloc excision led to complete recovery and normalization of QuickDASH scores [2]. Bektas and Ozmanevra (2019) detailed a 15-year-old female with a painful dorsal scapular mass measuring 6 × 4 cm, with symptoms including inability to sleep supine and cosmetic disfigurement; excision resulted in complete relief and no recurrence [6]. Chu and Sabpresentdy (2023) provided a different management perspective, reporting an 8-year-old boy with a 2.3 × 1.3 cm dorsal scapular lesion associated with scoliosis and winging but minimal pain; conservative chiropractic management improved symptoms despite radiographic enlargement of the mass [4].

A comparative summary of these cases is provided in **Table 1**, demonstrating the heterogeneity of presentation, management strategies, and outcomes:

Author & Year	Age / Sex	Side & Location	Clinical Presentation	Imaging Features	Cartilage Cap Thickness	Management	Outcome & Follow-up
Munde et al., 2025 [9]	10 y / Male	Right, dorsal scapula	Painless enlarging mass; cosmetic concern; supine discomfort	X-ray, CT, MRI: 23 × 20 mm	3 mm	Muscle-sparing excision	Pain-free ROM; no recurrence at 3 weeks
Das et al., 2023 [2]	10 y / Male	Right, dorsal scapula	Painless swelling; supine discomfort	X-ray, MRI: 4.8 × 4.1 × 3.4 cm	4.6 mm	En-bloc excision	QuickDASH 0 at 12 wks; no recurrence at 1 yr
Chu & Sabpresentdy, 2023 [4]	8 y / Male	Left, dorsal scapula	Mid-back pain, scoliosis, winging; minimal pain	CT: 2.3 × 1.3 cm	Not reported	Conservative care	Symptomatic improvement; radiographic growth at 6 month
Bektas & Ozmanevra, 2019 [6]	15 y / Female	Left, dorsal scapula	Painful swelling; cosmetic concern; supine difficulty	X-ray, CT: 6 × 4 cm	2 mm	Osteotome excision	Symptom resolution; no recurrence at 1 yr
Present case, 2025	15 y / Female	Left, dorsal scapula	Post-fall pain; lifting difficulty	X-ray, CT, MRI: 3.5 × 2.0 cm; displacement of latissimus dorsi	8.8 mm	Complete excision	Full functional recovery; no early recurrence

From this comparative analysis, several conclusions can be drawn. First, dorsal scapular osteochondromas tend to occur in children and adolescents, frequently causing pain or discomfort in the supine position, mechanical irritation, or cosmetic concern. Second, cartilage cap thickness in pediatric lesions is usually <5 mm; present case contributes by

documenting a cap of 8.8 mm, higher than reported averages but benign in context. Third, while conservative management may be justified in minimally symptomatic cases, surgical excision remains the definitive treatment for symptomatic patients and consistently yields excellent outcomes. Finally, incorporating patient-reported outcomes, as demonstrated by Das et al. (2023), offers a valuable framework for assessing the true clinical impact of intervention [2]. Present case thus reinforces the importance of individualized management, with early surgical intervention when symptoms are functionally limiting, and expands the literature by documenting a trauma-associated symptomatic dorsal scapular osteochondroma with a comparatively thick cartilage cap in an adolescent female.

CONCLUSION

Dorsal scapular osteochondroma remains an exceptionally rare presentation of a common benign tumor. Present case underscores that even trauma can unmask symptoms in otherwise indolent lesions and highlights the significance of careful imaging evaluation, particularly of cartilage cap thickness, in guiding management. Complete surgical excision in symptomatic patients provides excellent functional recovery with minimal risk of recurrence, while comparative evidence confirms that individualized treatment ranging from observation to excision should be tailored to patient age, symptom burden and risk of malignant transformation.

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