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The "Winged" Tumor: A Case Report Of Symptomatic Scapular Osteochondroma

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Abstract
Background: *Osteochondroma is the most common benign bone tumor, typically affecting the metaphyses of long bones. However, its occurrence in the scapula is relatively rare. While often asymptomatic, scapular lesions can lead to pain, mechanical symptoms, or cosmetic deformity.*
Case Presentation: *A 21-year-old male presented with a painful, gradually enlarging mass on the posterior aspect of the right scapula persisting for one year. Physical examination revealed a firm, immobile, and tender swelling. Radiographic imaging and CT scans confirmed a sessile bony outgrowth characteristic of an osteochondroma.*
Management and Results: *The patient underwent surgical resection of the lesion. Histopathological examination showed bony trabeculae covered by a cartilaginous cap containing mature chondrocytes within lacunae, confirming the diagnosis and ruling out malignancy.*
Conclusion: *Although rare, osteochondroma should be considered in the differential diagnosis of scapular swellings. Surgical excision remains an effective treatment for symptomatic cases to alleviate pain and restore function*

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I. Introduction

Osteochondroma is the most common primary benign bone tumor, representing approximately 35–46% of all benign neoplasms and 10–15% of all bone tumors. While it is fundamentally a cartilage-capped bony outgrowth on the external surface of a bone, many experts consider it a developmental malformation or "pseudotumor" arising from the growth plate rather than a true neoplasm. These lesions typically occur in the metaphysis of long bones—most frequently the distal femur (30%), proximal tibia (15–20%), and proximal humerus (10–20%).

In contrast, involvement of flat bones is rare. The scapula is the most common flat bone affected, yet it accounts for only 3–5% of all osteochondroma cases. Within the scapula, tumors usually arise from the ventral (anterior) surface; presentation on the dorsal (posterior) aspect is an exceedingly rare entity, with very few cases documented in the literature.

II. Pathophysiology And Classification

The pathogenesis of osteochondroma involves the separation of a portion of the epiphyseal growth plate, which then herniates through the periosteal bone cuff and continues to grow independently through endochondral ossification.

- **Morphology:** Lesions are classified as either sessile (broad-based) or pedunculated (stalked).
- **Structure:** They are characterized by a hyaline cartilage cap and a marrow cavity that is continuous with the parent bone, a feature considered pathognomonic for the diagnosis.
- **Growth Pattern:** Development typically parallels skeletal growth, usually presenting in the first or second decade of life and ceasing at skeletal maturity.

III. Clinical Presentation And Significance

Most osteochondromas are asymptomatic and discovered incidentally. However, symptomatic scapular lesions can present with a range of mechanical and clinical challenges:

- **Mechanical Symptoms:** Pain during movement, snapping scapula syndrome, or "pseudo-winging" of the scapula.

- **Pressure Effects:** Compression of adjacent nerves or blood vessels, leading to numbness or vascular insufficiency.
- **Complications:** Formation of an overlying bursa (bursitis), fractures of a pedunculated stalk, or cosmetic deformity.

While solitary osteochondromas have a low risk of malignant transformation (<1%), sudden growth or a cartilage cap thicker than 2 cm in adults should raise suspicion of progression to secondary peripheral chondrosarcoma. Early recognition and surgical resection in symptomatic cases are essential for relieving pain and preventing long-term functional deficits.

IV. Case Presentation

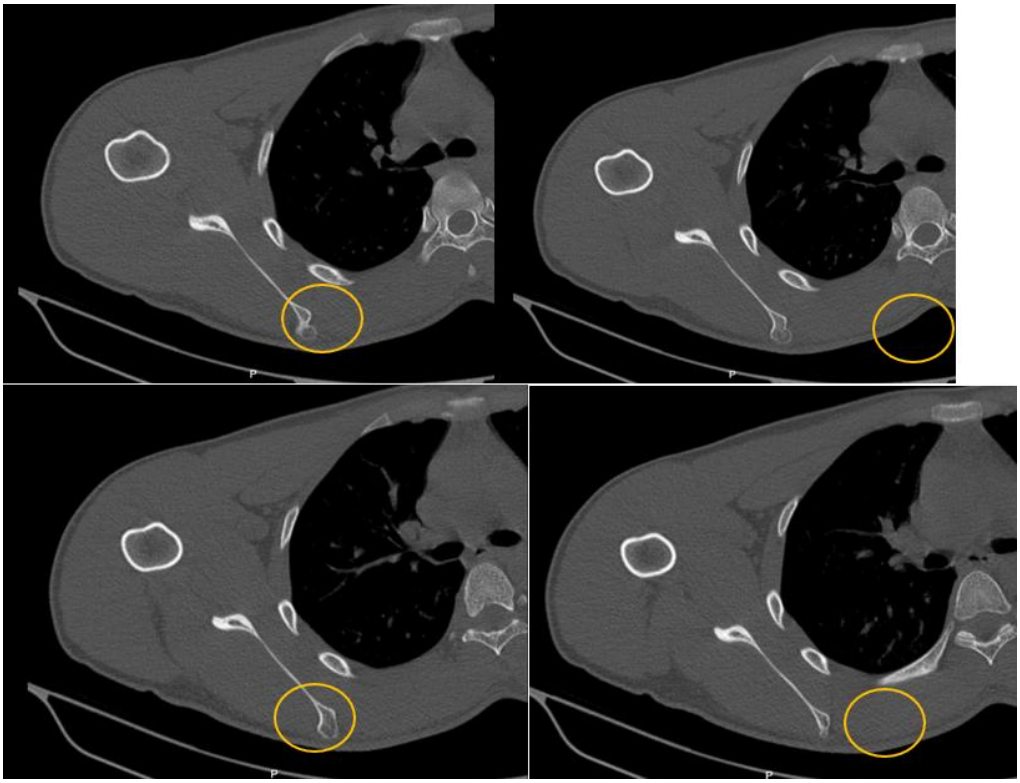
- **Patient History:** A 21-year-old male presented with a one-year history of a gradually enlarging, painful swelling located over the posterior aspect of his right scapula.
- **Physical Examination:** Upon clinical evaluation, a prominent mass was noted on the dorsal surface of the scapula. The findings included:
  - Consistency: Firm and immobile.
  - Tenderness: Significant tenderness on palpation.
  - Range of Motion: Discomfort noted during shoulder movements, though no severe restriction was documented at the time of presentation

- **Diagnostic Evaluation**

The diagnosis was established through a combination of radiographic and advanced imaging:

- **Plain Radiography:** Revealed a bony outgrowth extending from the scapula.

- **CT Scan:** Confirmed a sessile (broad-based) bony lesion. The imaging demonstrated cortex and medullary continuity between the host bone and the lesion, a hallmark of osteochondroma.

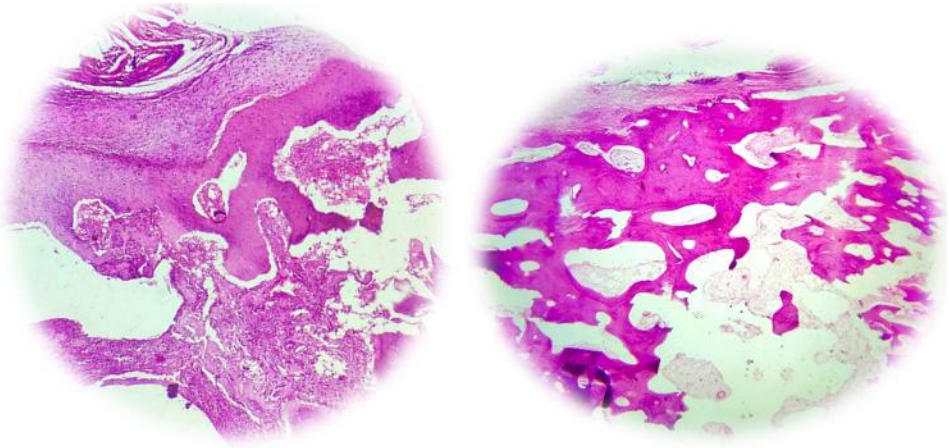


- **Differential Diagnosis Considered:** Chondrosarcoma (due to the patient's age), subscapular bursitis, and enchondroma.

V. Management And Outcomes

- Intervention: Surgical intervention was pursued, beginning with the marking of anatomical landmarks followed by a complete resection of the lesion.

- **Histopathology:** Under 10x magnification, the excised tissue showed a bony lesion composed of bony trabeculae interspersed by marrow spaces. The bony tissue was covered by a cartilaginous cap containing mature chondrocytes within lacunae. No evidence of malignancy was noted.



- **Post-Operative Recovery**: The patient's symptoms were addressed through the successful removal of the mechanical obstruction.

VI. Discussion

Osteochondroma is the most common benign bone tumor, yet its occurrence in the scapula is a rare clinical entity, accounting for only 3–5% of all cases. While long bones are the typical site of involvement due to rapid epiphyseal growth, the scapula's unique anatomy and development can lead to distinct symptomatic presentations when affected.

Anatomical and Symptomatic Variations

Most scapular osteochondromas arise from the ventral surface, where they often remain hidden until they reach a size sufficient to cause mechanical interference with the thoracic cage. This often leads to "snapping scapula syndrome" or "pseudo-winging," where the tumor physically displaces the scapula away from the ribs. In contrast, the presented case involved the **posterior (dorsal) aspect** of the scapula. Dorsal lesions are typically diagnosed earlier because they present as an obvious, palpable cosmetic deformity and cause localized pain due to friction against the overlying trapezius or infraspinatus muscles.

Diagnostic Imperatives

The cornerstone of diagnosis is the demonstration of cortical and medullary continuity between the tumor and the parent bone, a feature clearly visualized in this patient's CT scan. Imaging is not merely for diagnosis but for risk stratification. A critical parameter is the **cartilage cap thickness**. In skeletal maturity, a cap exceeding **2 cm** is a significant "red flag" for malignant transformation into secondary chondrosarcoma. While the solitary malignant transformation rate is low (approximately 1%), the pain and gradual enlargement noted in this 21-year-old patient necessitated a high index of suspicion and surgical resolution.

Management and Conclusion

The choice of surgical resection in this case aligns with the gold standard for symptomatic osteochondromas. Complete "en bloc" excision, including the perichondrium and the cartilaginous cap, is vital to prevent recurrence. The successful outcome in this 21-year-old male—marked by pain relief and the absence of malignancy—underscores that while scapular osteochondroma is rare, it is highly treatable.

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