

Case Report

Solitary osteochondroma of the left scapula in an adolescent male: a rare case report

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ABSTRACT

Osteochondroma is the most common benign bone tumor; however, involvement of the scapula is uncommon. Scapular osteochondromas may present with swelling, painless, no restricted shoulder movements, snapping scapula, or pseudo-winging, often mimicking neuromuscular causes. We report a case of a 14-year-old male who presented with a gradually progressive swelling over the left scapular region for 5-6 months, associated with pseudo-winging. On examination, a bony hard, non-tender swelling fixed to the scapula was noted, without neurovascular deficit. Radiographs revealed a bony exostotic lesion arising from the left scapular blade. The patient underwent complete surgical excision through a posterior approach. Histopathological examination confirmed osteochondroma, demonstrating a cartilage cap with underlying trabecular bone and marrow elements. At 1-month follow-up, the patient showed satisfactory wound healing, significantly improved shoulder function, and resolution of pseudo-winging, with no evidence of early complications or recurrence. Scapular osteochondroma is a rare cause of pseudo-winging in adolescents and should be considered in the differential diagnosis of scapular asymmetry. Careful clinical and radiological evaluation helps differentiate it from true neuromuscular winging. Complete surgical excision provides excellent symptomatic relief and favorable functional outcomes.

Keywords: Osteochondroma, Scapula, Pseudo-winging, Adolescent, Surgical excision

INTRODUCTION

Osteochondroma is a cartilage-capped bony projection arising from the external surface of bone. It is characterized by continuity of the cortex and medullary canal of the lesion with the parent bone. It is considered the most common benign bone tumor and commonly affects children and adolescents during the period of skeletal growth.^{1,2} The lesion most frequently occurs around the metaphyseal regions of long bones, especially around the knee, proximal humerus, and proximal femur.¹⁻³

Scapular involvement is relatively uncommon. When osteochondroma arises from the scapula, its clinical presentation depends on the size, surface, and direction of

growth. Dorsal scapular lesions may present as a visible or palpable swelling, while ventral lesions may interfere with scapulothoracic movement and cause snapping scapula, pain, bursal formation, or pseudo-winging.^{4,9}

Scapular winging is classically associated with neuromuscular causes such as long thoracic nerve palsy causing serratus anterior weakness or spinal accessory nerve palsy causing trapezius weakness.^{10,11} However, structural lesions around the scapula may mechanically displace the scapula away from the thoracic wall and produce pseudo-winging.^{5,6,9} Osteochondroma is one such rare osseous cause.

We report a case of a painful solitary osteochondroma arising from the left scapular blade in a 14-year-old boy,

presenting with pseudo-winging, treated by open surgical excision and confirmed by the histopathological examination.

CASE REPORT

A 14-year-old male patient presented to the orthopaedic outpatient department with complaints of swelling over the posterior aspect of the left scapular region for 5-6 months. The swelling was insidious in onset and gradually progressive.

There was no history of trauma, fever, discharge, weight loss, night sweats, sudden rapid increase in size, or similar swelling elsewhere in the body. There was no known family history suggestive of the multiple hereditary exostosis.

On inspection, a visible prominence was noted over the left scapular blade region. The left scapula appeared asymmetrical compared with the opposite side, and pseudo-winging of the left scapula was clinically evident. The overlying skin was normal, with no redness, sinus, ulceration, or dilated veins.

On palpation, the swelling was bony hard in consistency, fixed to the underlying scapula, and mildly tender. It was non-fluctuant, non-compressible, and not adherent to the overlying skin.

Shoulder movements were not painful and not restricted. Distal neurovascular examination of the left upper limb was normal.

Plain radiographs of the left shoulder and scapula demonstrated a bony exostotic lesion arising from the scapular blade region. Based on the clinical and radiological findings, a provisional diagnosis of solitary osteochondroma of the left scapula causing pseudo-winging was made.

The patient was planned for open surgical excision after routine pre-operative evaluation and informed consent from the parent/legal guardian. Under appropriate anaesthesia, the patient was positioned to allow adequate posterior exposure of the left scapular region. The swelling was localized and marked.

A posterior incision was taken directly over the lesion. Soft-tissue dissection was performed carefully, and the bony mass was exposed. The lesion was found arising from the scapular blade. Complete excision was performed from its base, taking care to remove the cartilaginous cap and bony stalk completely.

Haemostasis was achieved, bonewax was applied the wound was irrigated, and closure was performed in layers. The excised specimen measured approximately 4.2×3.5×2 cm.

It was irregular, greyish-white externally, and firm to hard in consistency. The specimen was sent for histopathological examination.

Gross examination confirmed an irregular tissue piece measuring approximately 4×2.5×1 cm. Microscopic examination showed a cartilage cap composed of mature hyaline cartilage with chondrocytes within lacunar spaces. An overlying fibrous perichondrium was seen. Areas of enchondral ossification were noted at the base, merging with trabecular bone. Underlying bony trabeculae with marrow elements were present. These findings were consistent with osteochondroma.

The immediate post-operative period was uneventful. The patient was advised wound care, analgesics, and gradual shoulder mobilization as tolerated.

At 1-month follow-up, the wound had healed satisfactorily. Pain had reduced, shoulder movements had improved, and pseudo-winging was clinically improved. There was no wound complication or clinical evidence of recurrence at short-term follow-up.

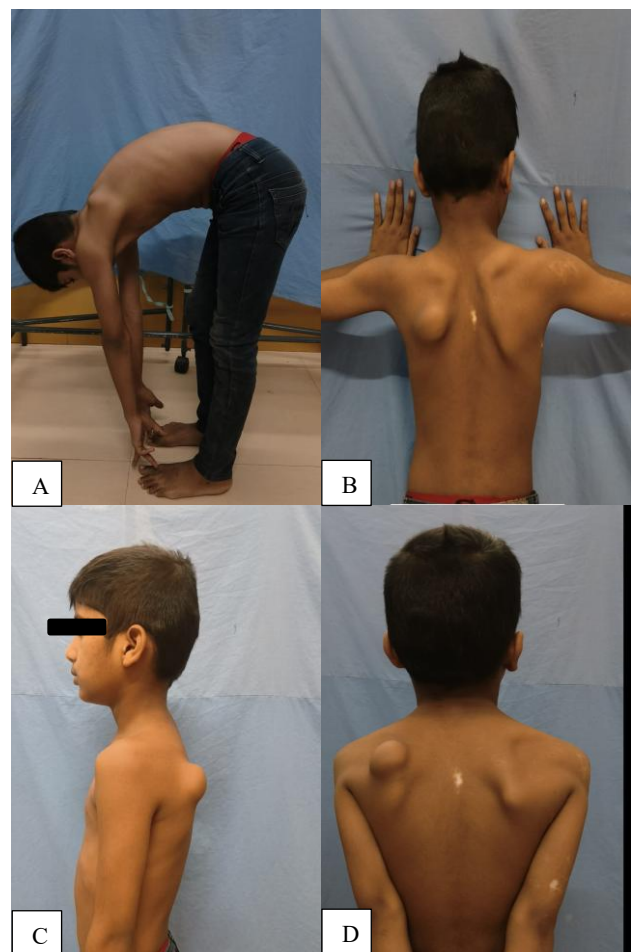


Figure 1 (A-D): Scapular pseudo-winging. Clinical photograph demonstrating asymmetry and pseudo-winging of the left scapula.

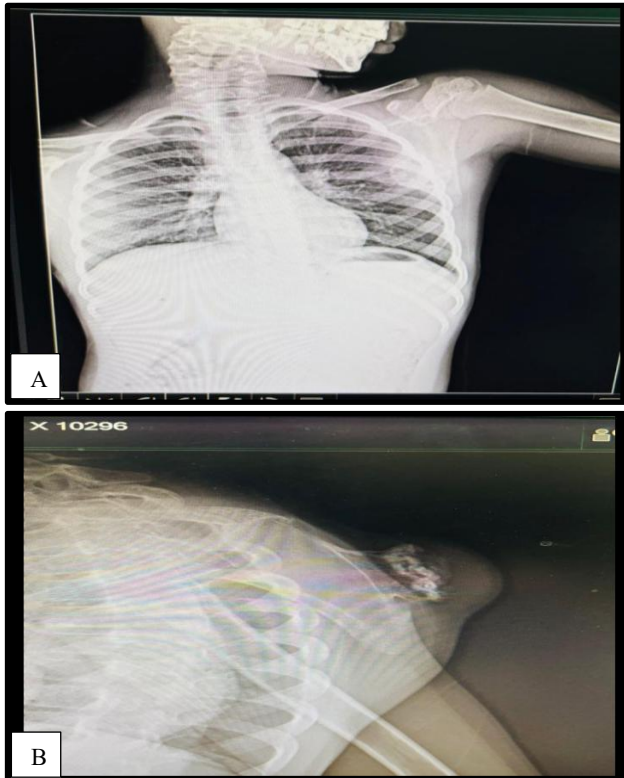


Figure 2: X-ray of left shoulder AP and scapular Y view shows osteochondroma arising from the dorsal surface of lower end of left scapula.

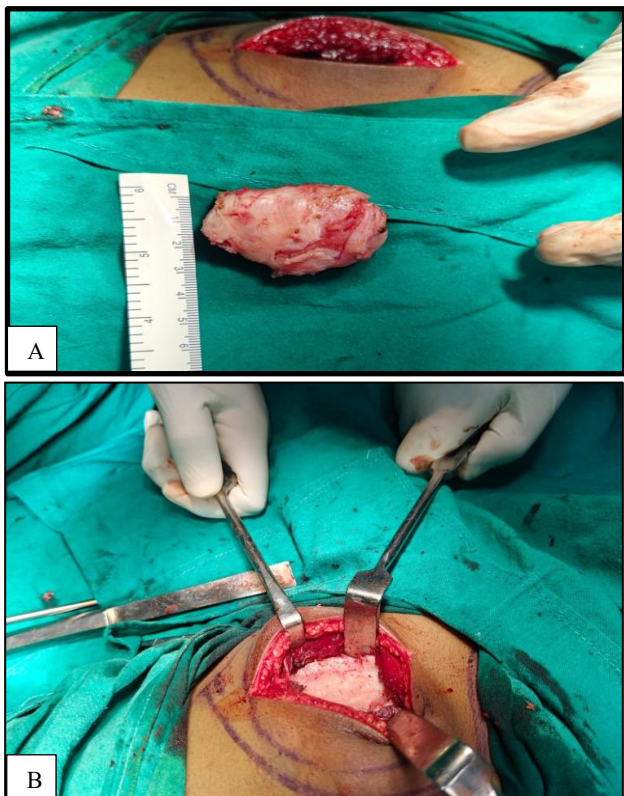


Figure 3: Intraoperative image of the tumor exposed during surgical dissection.



Figure 4: The excised specimen hard and firm whitish red, measured approximately 4.2×3.5×2 cm.

*Bone wax applied to the floor of osteomised peduncle to prevent further bleeding.

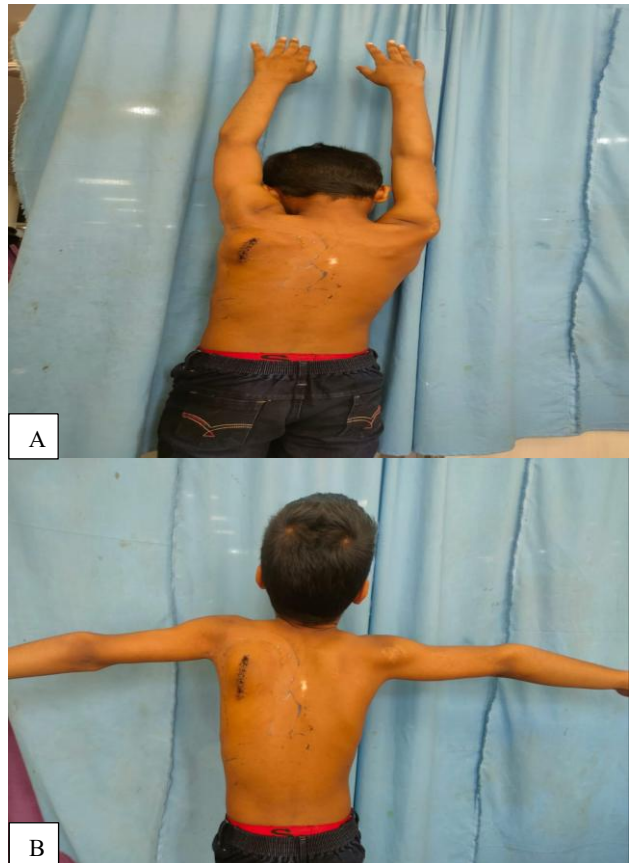


Figure 5: Post op ROM at 2 week follow.

DISCUSSION

Osteochondroma is a developmental cartilage-capped exostosis that grows by endochondral ossification. It commonly presents during the first two decades of life and usually stops growing after skeletal maturity.¹⁻³ Although most lesions are asymptomatic and discovered incidentally, symptoms may occur due to pain, mechanical irritation, cosmetic deformity, fracture, bursa formation,

neurovascular compression, or malignant transformation.¹⁻³

The scapula is an uncommon site for osteochondroma. Its flat morphology and close relationship with the thoracic wall make scapular osteochondroma clinically distinct from lesions arising in long bones. Depending on its location, a scapular osteochondroma may produce pain, swelling, snapping scapula, restricted shoulder movement, or pseudo-wingings.⁴⁻⁹ In the present case, the lesion produced pain, restricted shoulder movements, and pseudo-wingings, making the lesion symptomatic and functionally significant.

Pseudo-wingings differs from true scapular winging. True winging is usually neuromuscular in origin and results from weakness or paralysis of stabilizing muscles such as the serratus anterior, trapezius, or rhomboids.¹⁰⁻¹¹ Pseudo-wingings is caused by a structural lesion that mechanically displaces the scapula from the thoracic wall without primary neuromuscular dysfunction.^{5,6,9} In our case, the bony hard swelling fixed to the scapula, absence of distal neurological deficit, and radiographic demonstration of a scapular exostosis favoured mechanical pseudo-wingings rather than true neurological winging.

Similar cases have been described in the literature. Danielsson and El-Haddad reported winged scapula due to osteochondroma in children.¹² Chillemi et al. described scapular osteochondroma as a cause of scapular winging in an adolescent and emphasized that osteochondroma should be included in the differential diagnosis of winged scapula in young patients.⁵ Pawar et al reported a ventral scapular osteochondroma causing pseudo-wingings and highlighted that scapular osteochondroma can push the scapula away from the thoracic wall.⁶ Seth et al described ventral scapular osteochondroma causing pseudo-wingings in a young adult and recommended considering this rare diagnosis in patients with scapular asymmetry and bony swelling.⁷

Plain radiographs remain the initial imaging modality for suspected osteochondroma. The classical radiographic feature is continuity of the cortex and medullary canal of the lesion with the parent bone.^{1,2} Computed tomography is useful in scapular lesions because of the complex anatomy and overlapping thoracic structures, while magnetic resonance imaging is helpful when cartilage cap thickness, soft-tissue involvement, bursal formation, or malignant transformation is suspected.^{1,2,13} In the present case, plain radiographs were sufficient to suggest the diagnosis, which was subsequently confirmed by histopathological examination.

The differential diagnosis of a bony swelling over the scapula includes osteochondroma, osteoma, post-traumatic exostosis, parosteal osteosarcoma, chondrosarcoma, and other benign or malignant surface bone lesions. Clinical history, slow progression,

radiographic appearance, intra-operative findings, and histopathology help in establishing the final diagnosis.

Surgical excision is indicated in osteochondroma when the lesion is symptomatic, painful, cosmetically unacceptable, functionally limiting, rapidly enlarging, compressing neurovascular structures, or suspicious for malignant transformation.¹⁻³ Complete removal of the cartilage cap and base is essential because incomplete excision may lead to recurrence.^{1,3} Histopathology in osteochondroma typically shows a cartilage cap composed of hyaline cartilage, chondrocytes within lacunae, endochondral ossification at the base, and underlying mature trabecular bone with marrow elements.^{1,3,14} The histopathological features in our case were consistent with these classical findings.

Malignant transformation is rare in solitary osteochondroma but should be suspected in the presence of rapid growth after skeletal maturity, new-onset severe pain, irregular mineralization, soft-tissue mass, or increased cartilage cap thickness.¹⁻³ No clinical or histopathological evidence of malignant transformation was noted in this case.

The limitation of this report is the short follow-up period of 1 month. Longer follow-up is required to evaluate complete functional recovery, recurrence, and long-term correction of pseudo-wingings.

CONCLUSION

Scapular osteochondroma is a rare anatomical presentation of a common benign bone tumour. It should be considered in adolescents presenting with a slow-growing scapular swelling, especially when associated with pain, restricted shoulder movements, or pseudo-wingings. Careful clinical examination and radiographic evaluation help differentiate mechanical pseudo-wingings from true neuromuscular winging. Complete surgical excision provides symptomatic relief, improves shoulder function, corrects mechanical pseudo-wingings, and confirms the diagnosis histopathologically.

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Ethical approval: Not required

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