

A Rare Case of Osteochondroma of the Distal End of the Clavicle right side in a 27-Year-Old Female

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Abstract:

Background:

Osteochondroma is the most common benign bone tumor, predominantly affecting the metaphyseal region of long bones. Clavicular involvement is rare, especially at the distal (lateral) end, and even more unusual in adult females.

Case Presentation:

We report a case of a 27-year-old female who presented with a painless, gradually enlarging swelling over her right shoulder. Clinical examination and imaging revealed a solitary bony outgrowth from the distal end of the left clavicle. The patient underwent surgical excision, and histopathology confirmed the diagnosis of osteochondroma with no signs of malignant transformation. She had an uneventful postoperative course and full functional recovery.

Conclusion:

Osteochondroma of the distal clavicle is an uncommon presentation. High clinical suspicion and radiological evaluation are key for diagnosis. Surgical resection is curative, particularly in symptomatic patients or when malignancy cannot be excluded.

Keywords: Osteochondroma, Clavicle tumor, Distal clavicle, Benign bone tumor, Shoulder mass, Case report

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I. Introduction

Osteochondroma is a benign bone tumor that typically occurs in the metaphyseal regions of long bones, such as the femur, tibia, and humerus. It arises from the growth plate and is composed of a bony stalk capped by cartilage. While common in the appendicular skeleton, osteochondromas involving flat or small bones are rare, with clavicular involvement accounting for less than 1% of all cases.

Within the clavicle, the medial (proximal) end is more frequently involved than the distal (lateral) end. Distal clavicular osteochondromas are exceedingly rare, and even fewer cases have been documented in adult females. These lesions are usually asymptomatic but can present with swelling, pain, or impingement depending on their size and location. Rarely, they can cause neurovascular compression or undergo malignant transformation to secondary chondrosarcoma.

Due to its rarity and the variety of possible differential diagnoses for clavicular masses—including osteosarcoma, enchondroma, and metastases—accurate diagnosis requires a combination of clinical, radiological, and histopathological evaluation.

We present a rare case of a solitary osteochondroma arising from the distal end of the clavicle in a young female, managed successfully with surgical excision.

II. Case Presentation

A 27-year-old right-handed female presented to the orthopedic outpatient clinic with a 9-month history of a painless, slowly enlarging swelling over the anterolateral aspect of her right shoulder. The swelling had recently begun to interfere with her ability to wear shoulder bags and lie on her right side.

There was no history of trauma, fever, weight loss, or neurological symptoms. She had no known family history of bone tumors or multiple hereditary exostoses.

On physical examination:

A firm, non-tender, immobile bony mass was palpable over the distal end of the right clavicle.

The overlying skin was normal with no signs of inflammation.

Range of motion in the right shoulder was full and pain-free.

No axillary lymphadenopathy or neurovascular deficits were noted.

Investigations:

X-ray (AP view of the right shoulder): Revealed a pedunculated, well-defined bony mass arising from the inferior aspect of the distal clavicle, projecting anteroinferiorly.

CT scan (3D reconstruction): Showed a corticated lesion continuous with the cortex and medullary cavity of the clavicle, consistent with osteochondroma. No evidence of cortical breach or soft tissue invasion.

MRI: Confirmed the presence of a cartilage cap measuring approximately 0.6 cm in thickness, with no signs of surrounding soft tissue edema or malignancy. The mass appeared to abut but not compress adjacent structures such as the brachial plexus or subclavian vessels.

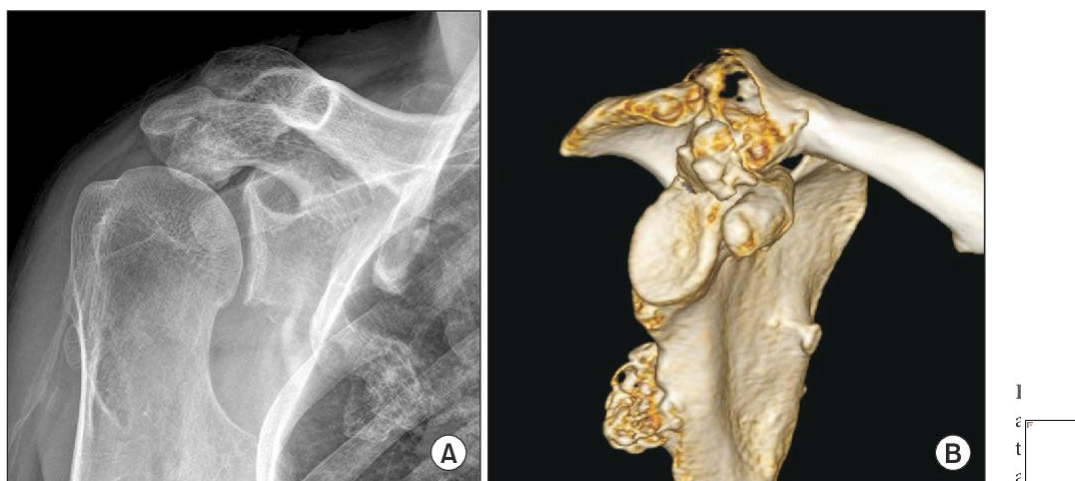


Fig1



Fig2

Fig1: CT and Xray shoulder show bony growth over distal end of right clavicle

Fig2: shows swelling over right distal clavicle

Management

Given the patient's symptoms and radiological findings, surgical excision was planned.

- Procedure: complete excision of the lesion.
- Histopathology: Confirmed osteochondroma with no evidence of malignant transformation.
- Intraoperative biopsy done and sent for pus culture and sensitivity, AFB/ZN :AFB/ZN staining and culture yielded no growth.
- Post operative Xray showed satisfactory excision with no fracture.

2)Postoperative Care

- Postoperative course: Uneventful; the patient reported complete resolution of pain at 3-month follow-up.

3)Histopathology Report:

Grossly: a sessile bony lesion with a smooth cartilage cap (~2–3 mm).

Microscopically: hyaline cartilage cap resembling growth plate, endochondral ossification, and marrow continuity typical of osteochondroma



fig 3

The intraoperative biopsy was performed and the specimen was sent for Histopathological examination, pus culture and sensitivity, AFB/ZN stainin(Figure 3b)

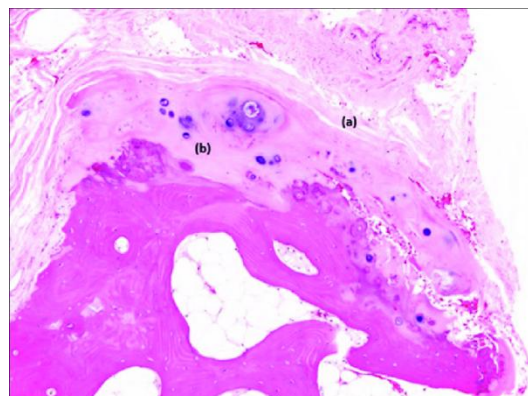


fig 4(Histopathology reports suggestive of osteochondroma with no malignancy(fig 4))

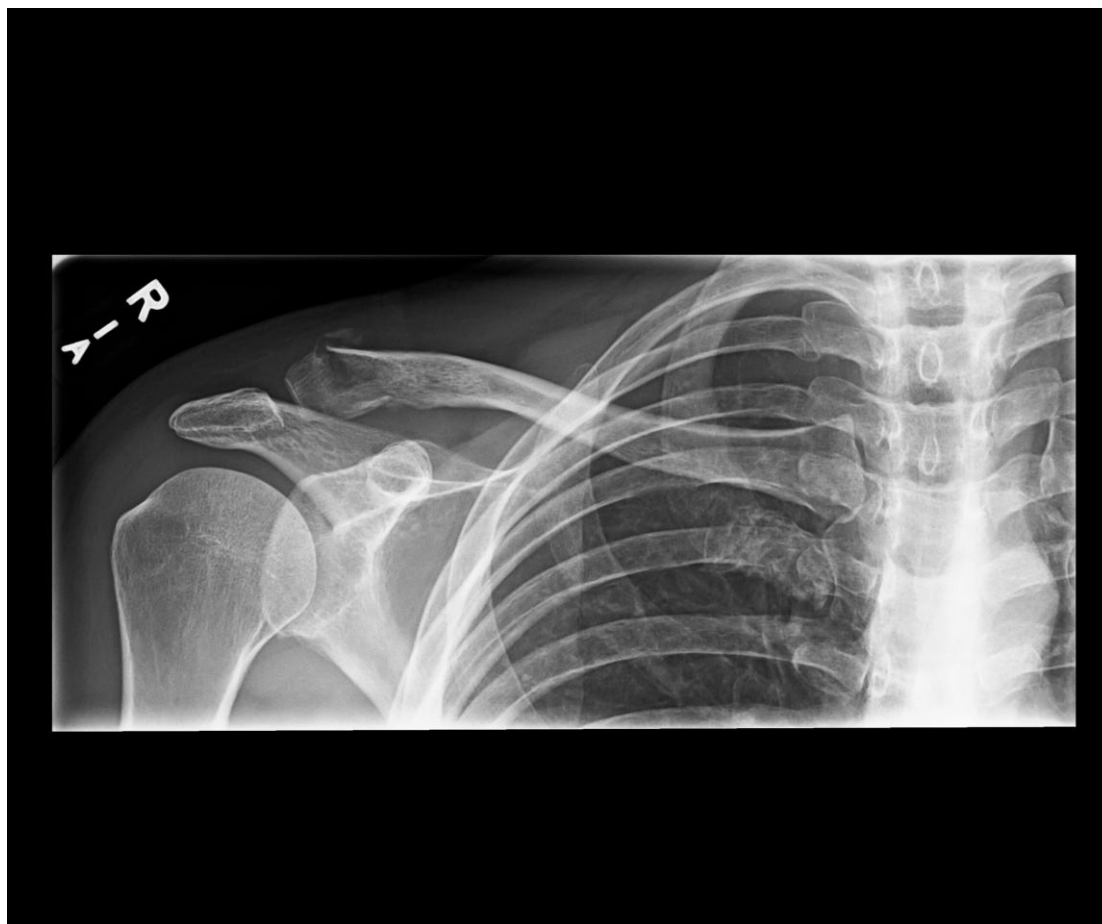


fig 5

Post operative Xray showed satisfactory excision with no fracture(fig 5)

III. Discussion

Osteochondromas are the most common benign bone tumors, typically arising during skeletal growth and most often involving the metaphyseal regions of long bones such as the femur, tibia, and humerus. They represent developmental abnormalities of the growth plate, rather than true neoplasms, and are characterized histologically by a cartilage-capped bony projection that maintains continuity with the underlying bone cortex and marrow. While osteochondromas account for approximately 35–50% of all benign bone tumors, involvement of the clavicle is exceedingly rare, particularly at the distal (lateral) end. Clavicular osteochondromas constitute less than 1% of reported cases, and symptomatic lesions in adult females are even more uncommon. To date, only a handful of case reports document osteochondromas arising from the distal clavicle causing clinical symptoms in adults, making this case particularly unique.

The clavicle differs from most other bones in that it ossifies through intramembranous and endochondral processes and lacks a traditional growth plate, which likely contributes to the rarity of tumor formation at this site. When present, clavicular osteochondromas are often located proximally and may remain asymptomatic. However, as demonstrated in this case and similar reports, distal clavicular lesions can be clinically significant when they cause mechanical irritation to adjacent structures in the subacromial space, particularly the rotator cuff tendons and subacromial bursa. Patients typically present with non-specific shoulder pain, limited range of motion, or signs of impingement, which may mimic common rotator cuff pathology, leading to diagnostic delays.

In this case, the patient presented with persistent right shoulder pain and signs of subacromial impingement. Imaging played a crucial role in establishing the diagnosis. Plain radiographs revealed a pedunculated lesion arising from the distal clavicle. CT scanning helped delineate the osseous continuity between the lesion and the clavicle, while MRI was essential in evaluating the cartilage cap thickness, assessing for soft-tissue impingement, and excluding malignant transformation. MRI findings of a cartilage cap <3 mm and absence of soft tissue mass are consistent with a benign osteochondroma. While rare, transformation into a secondary chondrosarcoma must always be considered in symptomatic adults, particularly when the cartilage cap exceeds 2 cm, or when there is associated pain, growth after skeletal maturity, or signs of cortical destruction on imaging.

Surgical excision is the treatment of choice for symptomatic osteochondromas, especially when they impinge upon adjacent structures or cause significant functional limitation. In this case, an arthroscopic-assisted mini-open resection was performed. This approach offers several advantages over traditional open surgery, including smaller incisions, decreased postoperative pain, faster recovery, and the ability to inspect the subacromial space thoroughly. The mini-open component enabled precise removal of the lesion while protecting the acromioclavicular joint and surrounding neurovascular structures. Literature supports this approach, with reports such as those by Messinese et al. (2020) and Afshar et al. (2023) demonstrating excellent outcomes following arthroscopic or arthroscopic-assisted

IV. Conclusion

Distal clavicle osteochondroma, though rare, should be considered in young adults with non-resolving shoulder impingement. Advanced imaging aids in diagnosis. Arthroscopic-assisted resection is a minimally invasive and effective treatment that yields excellent functional recovery without recurrence.

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