



# Impingement syndrome because of an osteochondroma lesion of the distal clavicle

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Impingement syndrome is a common shoulder disorder; however, impingement syndrome because of a tumoral lesion such as an osteochondroma is a very rare disorder. There are a few case reports about impingement syndrome secondary to an isolated osteochondroma lesion in the literature.<sup>1–9</sup> In the current report, we describe a rare case of impingement syndrome because of an isolated osteochondroma lesion at the distal clavicle.

### Case report

A 32-year-old woman came to us because of pain and discomfort of her left shoulder since two years before. Her complaint was intensified by overhead activities. She did not remember any traumatic event around her left shoulder. She had been treated with physical therapy and non-steroidal anti-inflammatory drug medications with diagnosis of rotator cuff tendonitis before; however, her symptoms did not resolve. On examination, her shoulder ranges of motion were normal in all directions. There was no palpable mass on her shoulder. There was no muscle wasting and weakness around her shoulder. Hawkin maneuver and Jobe test were positive. She was otherwise normal.

An antero-posterior plain radiograph of the left shoulder demonstrated a large osteochondroma lesion raised from the distal clavicle. The lesion was extended inferiorly and medially toward the supraspinous fossa and had violated the subacromial space

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(Fig. 1). The anatomy of the lesion was demonstrated better with computed tomography 3D reconstruction imaging. (Fig. 2) Magnetic resonance imaging images demonstrated the continuity of the tumor and distal end of the clavicle (Fig. 3), mechanical pressure of the osteochondroma lesion on the supraspinatus tendon, abundant subacromial bursitis and a less than 2 mm cartilage cap thickness of the lesion (Fig. 4). Further examination revealed that the patient's osteochondroma was a solitary lesion. We concluded that the lesion had a benign nature, and we offered the patient to remove the lesion.

Through a direct approach over the acromioclavicular joint, distal clavicle, and subperiosteal approach, we osteotomized the lesion and removed it completely. The lesion measuring 4×3×3 cm was sent for histopathologic study (Fig. 5). The surface of the supraspinatus tendon and muscle was intact. Histopathologic study confirmed that the lesion was a benign osteochondroma (Fig. 6).

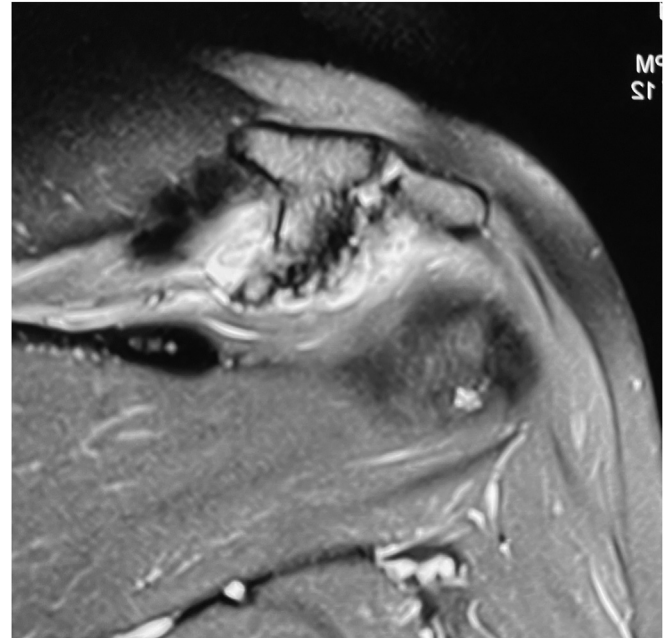
The postoperative course was uneventful. Three months postsurgery, she had normal range of motion, her symptoms were resolved, and she was satisfied from the result of the surgery. There was no recurrence of the lesion at two years postoperatively.

### Discussion

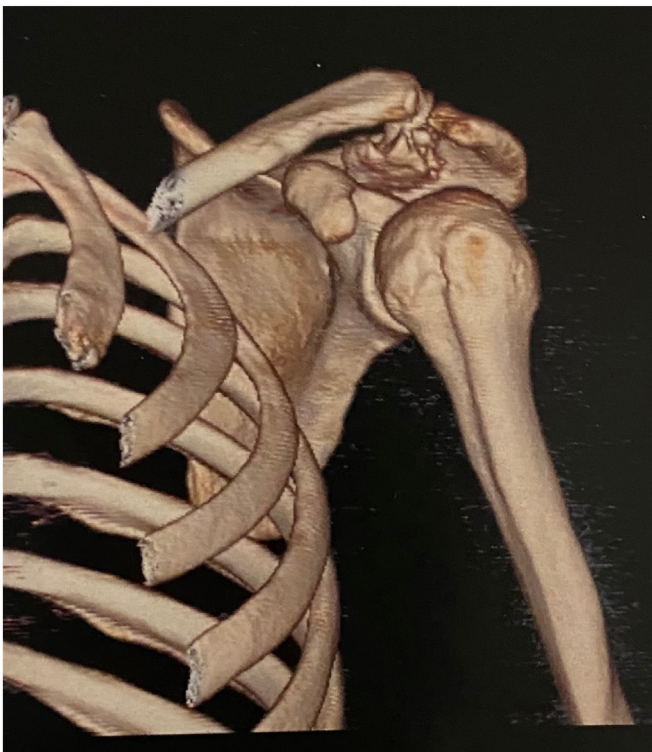
Osteochondroma is common bone tumor and is believed to arise from aberrant growth of normal growth plate cartilage. Osteochondroma is usually seen in the metaphyseal of the distal femur, proximal tibia, and proximal humerus; however, isolated osteochondroma of distal clavicle is a very rare finding. During the embryonic period, the clavicle develops by intramembranous ossification. Then cartilage develops at the sternal and acromial ends of the clavicle, and it grows similar to that of a long bone enchondral ossification. Later, a secondary ossification center develops at the sternal end; however, it is not clear whether a



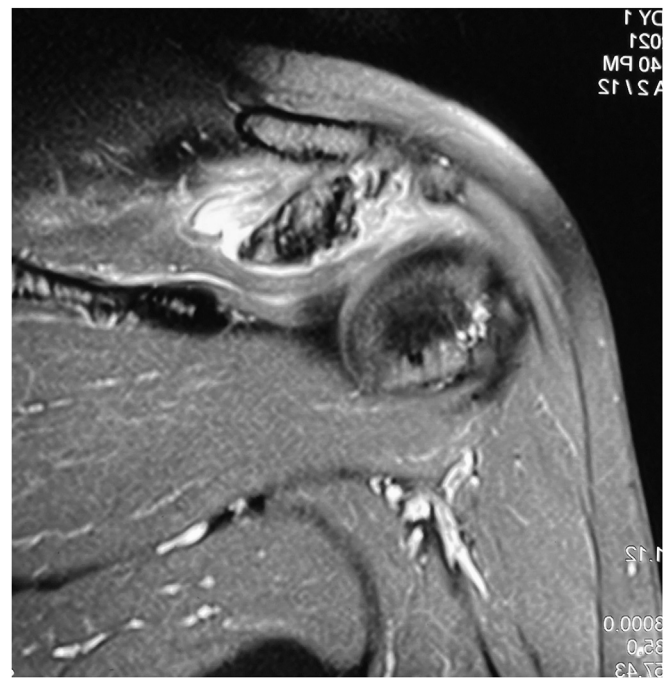
**Figure 1** Antero-posterior plain radiograph of the left shoulder demonstrates an osteochondroma lesion extending and violating the subacromial space.



**Figure 3** An MRI image demonstrated the continuity of the tumor and distal end of the clavicle. *MRI*, magnetic resonance imaging.



**Figure 2** Computed tomography 3D reconstruction of the left shoulder demonstrates an osteochondroma lesion extending and violating the subacromial space.



**Figure 4** An MRI image demonstrates the pressure of the osteochondroma lesion on the supraspinatus tendon. *MRI*, magnetic resonance imaging.

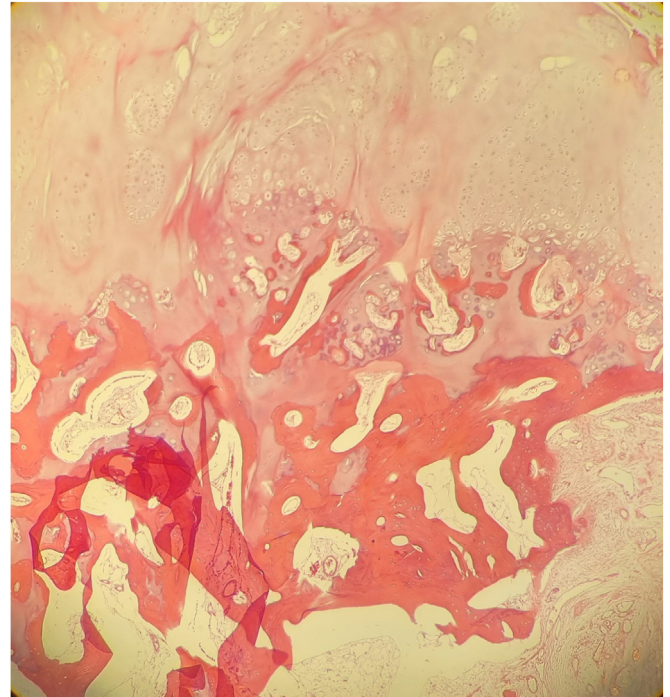
secondary ossification center develops at the acromial end. Finding of an osteochondroma at the lateral end of the clavicle may be evidence that the cartilage at the end of the clavicle has a true growth plate characteristic.<sup>2,7</sup>

Osteochondroma is usually a slow-growing lesion; however, it may become complicated and symptomatic because of a fracture of

its stalk, an overlying painful bursitis, malignant transformation, neurovascular compression, and impingement against soft tissue structures. Fallon and Hollinshead have reported a full-thickness rotator cuff tear because of a solitary osteochondroma of the distal clavicle.<sup>2</sup> Kim et al have reported a case of impingement of the shoulder and biceps tear because of an osteochondroma of the distal clavicle.<sup>4</sup>



**Figure 5** The lesion measured 4×3×3 cm was sent for histopathologic study.



**Figure 6** Histopathology study demonstrates unremarkable trabecular bone with a cartilaginous cap, composed of benign bland looking chondrocytes (H&E, 10×).

## Conclusion

In the current report, we describe a case of an isolated osteochondroma lesion because of its rare location at the distal clavicle and subsequent impingement syndrome.

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**Patient consent:** Obtained.

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