Case Report

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# Enchondroma of acromion: case report of an unusual tumor location

Şafak Aydın Şimşek[1], Tolgahan Cengiz[1], Alparslan Yurtbay[2], Hüseyin Sina Coskun[1], Nevzat Dabak[1]

[1]Department of Orthopedics and Traumatology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkiye
[2]Department of Orthopedics and Traumatology, Faculty of Medicine, Samsun University, Samsun, Turkiye

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## ABSTRACT

Enchondroma is a benign cartilaginous tumor and is rarely located on the shoulder girdle. The lesion that affects the subacromial area can cause rotator cuff impingement's clinical signs. Our aim is to present this patient who has shoulder pain and was finally diagnosed with an acromial enchondroma. A 62-year-old female patient had an insidious left shoulder pain in the last 2 years. At the physical examination of the left shoulder, subacromial impingement syndrome's sign was noticed. Plain radiographs didn't have any typical features and magnetic resonance imaging (MRI) images were used for diagnosis. Well-circumscribed hypointense content on T1-weighted images was observed, and the lesion was seen as hyperintense on T2-weighted images. At the same time, subacromial effusion was noticed. Because of enchondroma's small size, the patient was followed up with medical treatment and radiographical features. At one year follow-up, there was no change in the size of the lesion and no increased complaint about her left shoulder. Physicians should keep in mind that enchondroma may occur rarely in acromion and this condition may cause subacromial impingement. Therewithal, this diagnosis which is a rare reason for subacromial impingement syndrome should be considered in the differential diagnosis of shoulder pain.

**Keywords**: Enchondroma, neoplasm, acromion, shoulder, impingement

## INTRODUCTION

Enchondroma is a common benign cartilaginous tumor, defined more exactly as a benign mature hyaline cartilaginous tumor located in the medullar space of the tubular bones. One type of musculoskeletal tumor of the hand is enchondroma, usually found in the tubular bones. After osteochondroma, enchondroma follows in frequency among benign bone tumors.[1] The tumor arises in the medullary cavity and grows into the cortex, forming a prominent endogenous mass in the bone. This tumor type has no unique clinical symptoms but an enchondroma is always difficult to diagnose.[2] Enchondroma is rarely found in the shoulder girdle. Although most enchondromas are asymptomatic, depending on the lesion's size and localization, radiologic presentation enchondromas can be presented in different clinical features. Enchondromas do not routinely require surgical treatment, unless they are symptomatic, increasing in size, or there is a risk of pathological fracture.[3] The gold standard treatment of enchondromas has been considered curettage and autograft if surgery is required.[4]

In this case, we report a 62-year-old woman with a subacromial impingement syndrome caused by an enchondroma in the center acromion. We describe the clinical features and radiological imaging features. Our aim is to contribute to the unusual localization of enchondroma and also represent a rare reason for subacromial impingement syndrome.

## CASE

A 62-year-old woman who has a mechanical pain in her left shoulder in the last 2 years without previous trauma. The patient was referred to the orthopedic surgery outpatient clinic for insidious left shoulder pain that started 2 years ago. The patient was treated conservatively for one year and her complaints did not regress and she was referred to our clinic.

On physical examination, palpation of the posteromedial edge of acromion was painful. There was full range of motion and the muscle strength was normal comparing to the opposite shoulder. When we

**Corresponding Author:** Şafak Aydın Şimşek, drsafakaydin@gmail.com

passively raised the patient's right arm to 90 degrees of abduction and forced full extension to the right shoulder, pain increased. Hawkins signs were clearly positive. Afterwards when we stabilized the right scapula and passively raised the arm to flexion, pain increased. Neer impingement sign was also positive.

Plain radiographs showed a degeneration of acromioclavicular joint and irregular appearance at the posteromedial edge of acromion (**Figure 1a**). **Figure 1a** is a specialized projection of acromioclavicular joint, called as Zanca view. According to the computerized tomography images, there is a central localized and benign characterized cystic formation which has sclerotic edges and calsifications on left acromion. This lesion is approximately 1.5 cm in diameters (**Figure 1b-1c**). Magnetic resonance imaging (MRI) without contrast was performed due to the patient's history of contrast material allergy. MRI revealed a well-circumscribed hypointense content on T1-weighted images (**Figure 2a**), which was hyperintense and had some focal regions of signal drop out where calcification was present on T2-weighted images. In addition to this, there was a subacromial effusion on fat suppressed T2- weighted images (**Figure 2b**). So the patient has shoulder impingement secondary to acromial enchondroma.

We decided to take a biopsy for tissue diagnosis. Tru-cut biopsy as the initial method of tissue diagnosis in bone tumors, in this way, Tru-cut-type needle was used for obtaining tissue samples. Clinical and radiological findings matched with pathology report as a result, the patient was diagnosed with enchondroma (**Figure 3**).

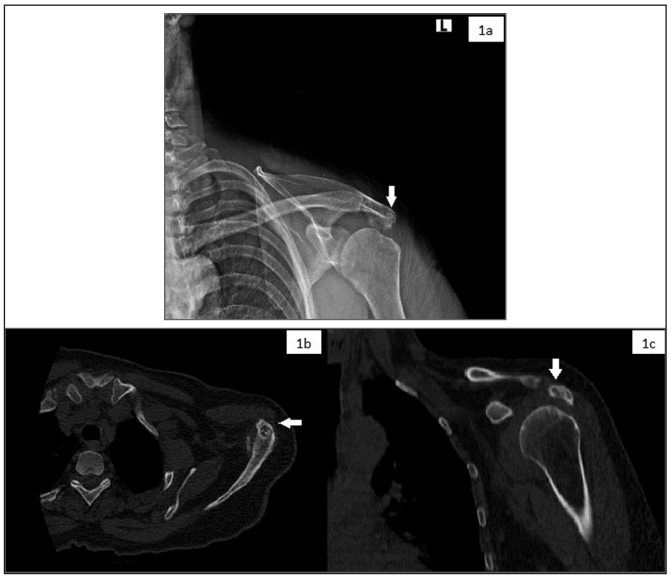


**Figure 1.** There is a degeneration on acromioclavicular joint and irregular appearance at the posteromedial edge of acromion on Zanca radiograph of the left shoulder (1a). Axial (1b), coronal (1c) CT images showed a central localized cystic formation which has sclerotic edges and calsifications on left acromion.

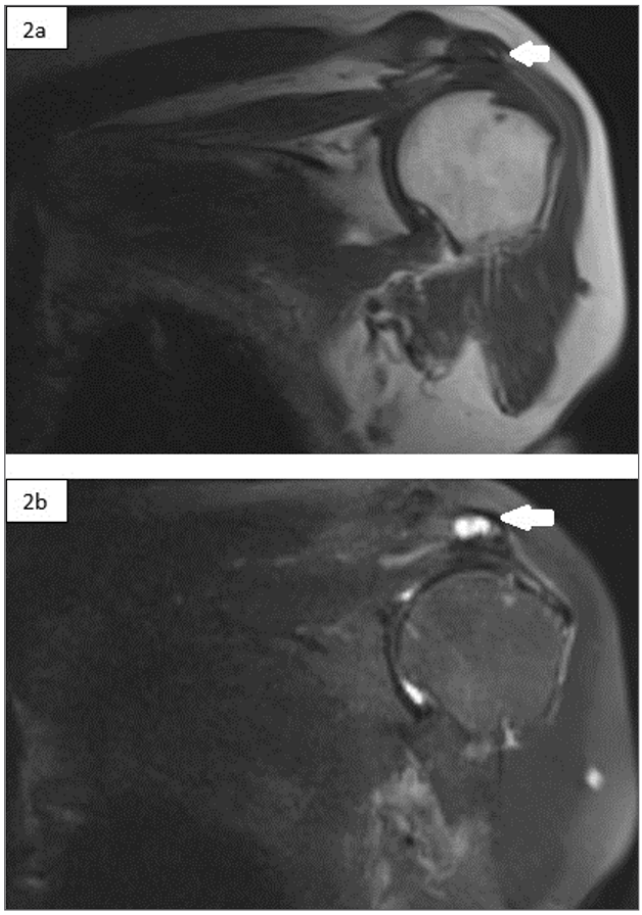


**Figure 2. 2a**-Coronal T1 MRI images showed that well-circumscribed hypointense content in acromion, **2b**-The lesion well-circumscribed hyperintense content which has some focal regions of signal drop out where calcification was present and subacromial effusion on fat suppressed T2-weighted images

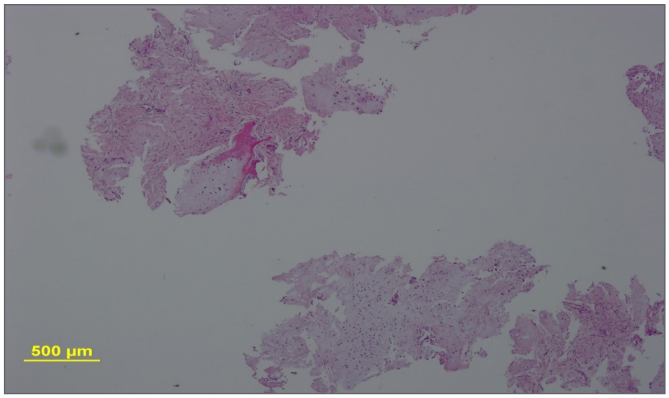


**Figure 3.** Histopathology of enchondroma with H&E stain (magnification ×40)

Because of the small sizes of the lesion, we decided to follow up the patient with conservative therapy. Medical drugs were used for anti-inflammatory and analgesic effects and physical therapy were simultaneously applied to strengthen the shoulder area muscles. We can decide to operate the patient for acromioplasty in the future, if her complaints don't regress. We've followed up the patient for 1 year and the patient's complaints haven't increased and her shoulder pain is under control by suggested medical treatment. At the same time the acromial lesion's size haven't changed at the radiographical plans.

## DISCUSSION

Enchondroma is developed from fragments of cartilage that are originated from the central physis. This tumor occurs most frequently in the proximal phalanges, followed by the metacarpals and middle phalanges.[5] Considering enchondroma could be useful to investigate the reasons for uncertain pain's etiology. Follow up is sufficient for asymptomatic enchondromas. Classical treatment is curettage and bone grafting if the surgery is required.

Primary malignant bone tumors of the scapula are rarely seen even though the shoulder girdle presents the third most common site for tumors of bone and soft tissue tumors.[6] Scapular tumors normally arise in the scapular blade, and very rarely are situated in the acromion-glenoid complex, causing subacromial impingement.[7] Although most enchondromas are asymptomatic, malignant transformation into secondary chondrosarcoma is possible in 1-9% depending on localization, pain, size, and radiologic presentation.[8]

Subacromial impingement syndrome appears to result from a variety of factors which are inflammation of the tendons and bursa, degeneration of the tendons, weak or dysfunctional rotator cuff musculature, posterior glenohumeral capsule tightness, postural dysfunctions of the spinal column and scapula and bony or soft tissue abnormalities of the borders of the subacromial outlet.[9] At the same time enchondroma can be one of the reasons of subacromial impingement. López at al.[7] reported one case which was about rotator cuff impingement due to enchondroma of acromion. This is a simple case about enchondroma of acromion. In addition to this, the lesion affected the subacromial area and caused the rotator cuff impingement syndrome. They used surgical treatment for the pathology.

## CONCLUSION

According to this data, acromial enchondroma is a very rare case in literature. In addition to this, rotator cuff impingement by acromial enchondroma is a rarer situation, as only one case was reported. We must consider this pathology in differential diagnosis about uncertain pain of shoulder.

## ETHICAL DECLARATIONS

### Informed Consent
Written consent was obtained from the patient participating in this study.

### Referee Evaluation Process
Externally peer-reviewed.

### Conflict of Interest Statement
The authors have no conflicts of interest to declare.

### Financial Disclosure
The authors declared that this study has received no financial support.

### Author Contributions
All of the authors declare that they have all participated in the design, execution, and analysis of the paper and that they have approved the final version.

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