



Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Scapular osteochondroma with winging: A case report

Raheef Alatassi^{a,*}, Saeed Koaban^a, Ismaeel Almugebel^b, Abdullah Alshehri^c^a Security Forces Hospital, Department of Orthopaedic Surgery, P.O. Box: 3643, Riyadh, 11481, Saudi Arabia^b King Saud Medical City, Department of Orthopaedic surgery, P.O. Box: 7790, Riyadh, 12746, Saudi Arabia^c Alfaisal University, College of Medicine, P.O. Box: 2897, Riyadh, 11196, Saudi Arabia

ARTICLE INFO

Article history:

Received 29 December 2017

Received in revised form 2 March 2018

Accepted 23 March 2018

Available online 28 March 2018

Keywords:

Osteochondroma

Scapula

Subscapular

Winging scapula

Bone neoplasm

Tumour

Case report

ABSTRACT

INTRODUCTION: Osteochondroma, a type of cartilaginous tumour, is the most common benign tumour affecting the bone. These tumours usually arise around the knee, proximal humerus, and pelvis, but very rarely occur at the scapula. Osteochondromas are usually asymptomatic and uncomplicated, but must be treated by surgical resection.

PRESENTATION OF CASE: In this report, we present a rare case of a symptomatic scapular osteochondroma associated with scapular winging in a 30-year-old man. This tumour exhibited positive radiological findings and was treated surgically, leading to a complete resolution of the patient's symptoms with no history of recurrence.

DISCUSSION: This case was unique because although the patient presented in his fourth decade of life, he had not noticed any signs indicative of lesional growth during adolescence and the maturation process. Additionally, this case was symptomatic and involved an unusual site.

CONCLUSION: By reporting this rare case of a ventral-side scapular osteochondroma that presented with scapular winging, we aim to increase the awareness of the unusual manifestations of osteochondroma, particularly atypical sites, signs, and symptoms. Furthermore, we have described the surgical treatment of this case in detail to assist other surgeons who face similar cases.

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1. Introduction

Osteochondroma is a type of benign cartilaginous tumour arising from the surface of a bone. This is the most common type of benign bone tumour, accounting for approximately 15% of all bone tumours in a series reported by Pongkripetch and Sirikulchayanonta [1], 45.3% of benign tumours according to Barbosa et al., [2] and 3% of tumours in the general population [3]. However, many cases of osteochondroma are asymptomatic and undiscovered, and therefore the true incidence remains unknown.

Osteochondromas increase in size with skeletal growth, but usually cease to grow upon skeletal maturity [4]. These mostly asymptomatic lesions most commonly affect the knee, proximal humerus, and pelvis, but rarely arise on flat bones, including the ventral surface of the scapula [4–8]. However, this condition must be ruled out in cases involving a winged scapula. Although these lesions are usually solitary, with an approximate size of 4 cm [3], complications such as mass effects may induce symptoms via mechanical pressure, fractures of the bony tumour stalk, nerve

impingement syndrome, malignant transformation of the cartilaginous cap, and the formation of large bursae.

Here, we report a rare case of an atypical large, solitary, symptomatic scapular osteochondroma associated with scapular winging in a 30-year-old man. In this case, surgical treatment led to a complete resolution of the patient's symptoms. The current case report was written according to the recently published SCARE criteria [10] as it used for supporting transparency and accuracy in publication of case-reports.

2. Presentation of case

A 30-year-old man presented at our emergency room with a history of diffused left shoulder pain that had started 6 months prior to presentation. The pain began gradually and progressed, despite no history of trauma or lifting of heavy objects. He reported diffuse pain around the shoulder with radiation throughout left upper limb and the sensation of a mass rubbing against the chest wall and causing pain with movement, but no history of cervical pain. This pain was persistent and interfered with normal daily activity. Additionally, he had no history of any chronic medical illness. Upon examination in the emergency room, he was found to exhibit swelling over the left shoulder from the posterior aspect, with scapular winging. His distal neurovascular examination of left upper extremity was normal.

* Corresponding author.

E-mail addresses: ralatassi@sfh.med.sa, raheef332@hotmail.com (R. Alatassi), skoaban@sfh.med.sa (S. Koaban), skoaban@sfh.med.sa (I. Almugebel), aalshehri@alfaisal.edu (A. Alshehri).

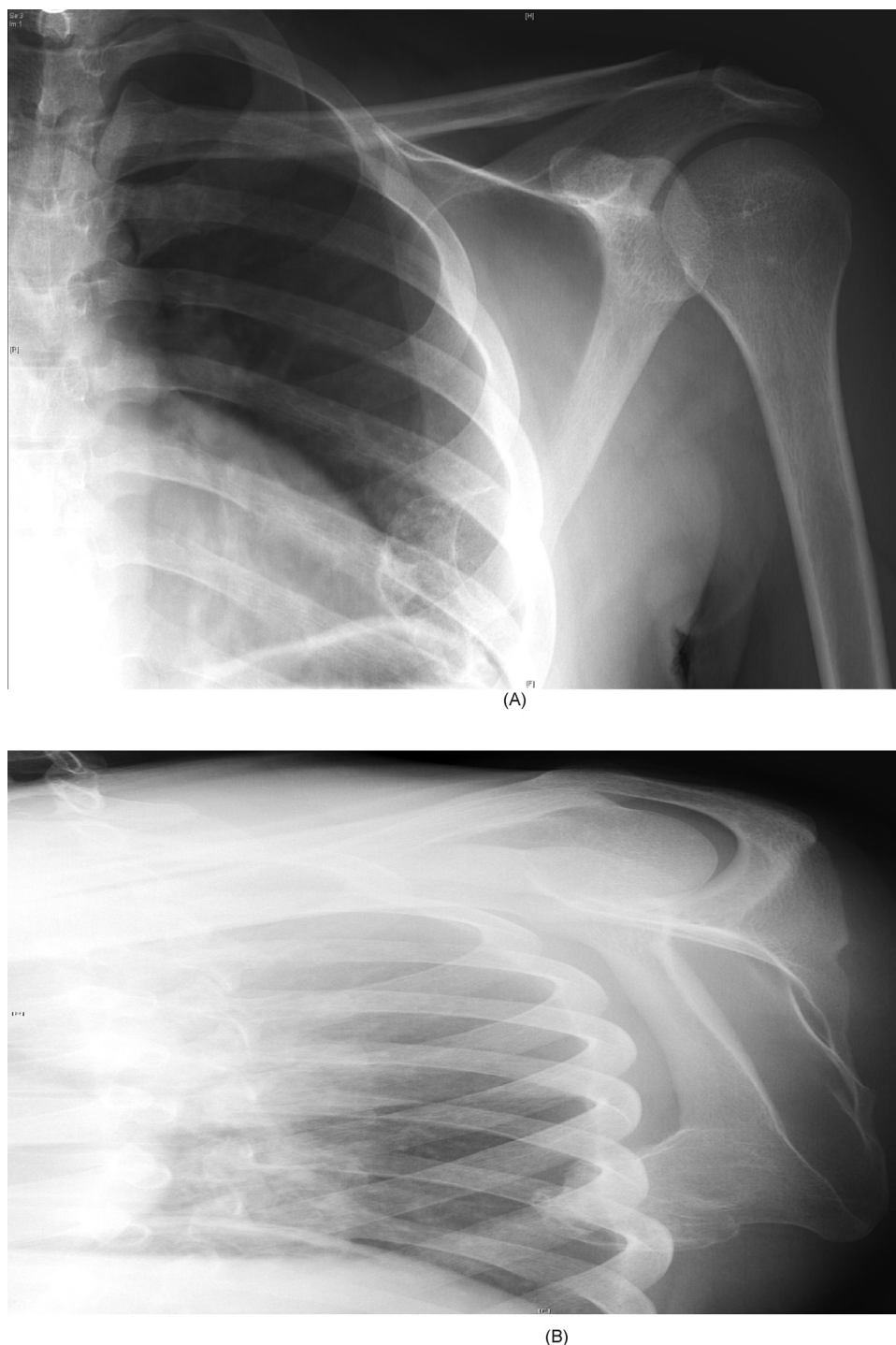


Fig. 1. Anteroposterior (A) and axillary (B) radiographs of the left shoulder show a well-defined lesion.

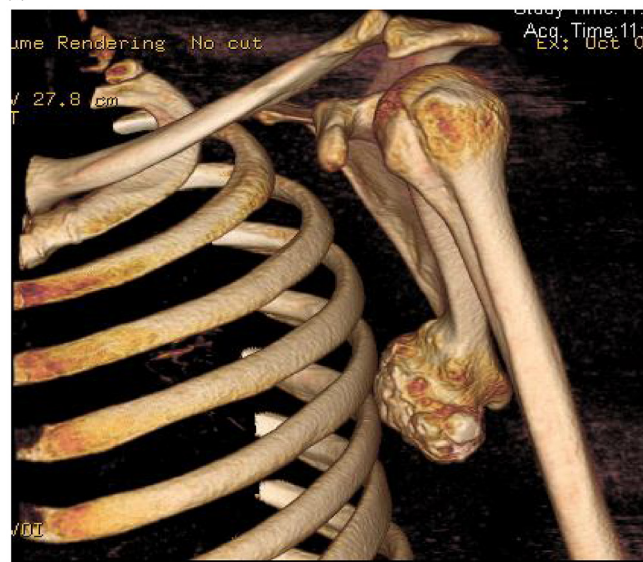
X-ray imaging revealed a well-defined benign lesion, identified as an osteochondroma, between the chest wall and ventral aspect of the left scapula (Fig. 1). A computed tomography (CT) scan revealed a large exostosis on the ventral aspect of left scapula that projected internally to the thoracic junction, suggestive of osteochondroma. This lesion measured approximately 5 cm × 5 cm × 2 cm, with no signs of fracture (Fig. 2). The patient was admitted to the hospital for elective excision of this mass.

For surgery, the patient was positioned in the lateral decubitus position and angled slightly forward over a beanbag with a well-placed axillary roll. The affected upper extremity was positioned

on an arm board in a 90° forward-flexed and slightly abducted position. The entire shoulder, chest wall, and neck were prepped and draped to allow for manipulation. The skin was incised along the prominent posterolateral acromion, with a medial extension to the superomedial angle of the scapula and caudal turn along the vertebral border. The incision curved distally around the superomedial angle and down the vertebral border (Fig. 3). Along these landmarks, a Judet posterior incision was made 1 cm inferior to the acromial spine and 1 cm lateral to the vertebral border to improve lateral flap retraction, and was deepened to the bony ridge of the acromial spine. The interval between the trapezius and del-



(A)



(B)

Fig. 2. Preoperative (A) coronal and (B) three-dimensional computed tomography scans reveal a large exostosis in the ventral aspect of the left scapula with internal projection to the thoracic junction.

toid insertions was split. To expose the entire posterior scapula, all musculature was lifted off of the infraspinatus fossa. Delicate subperiosteal dissection allowed the scapula to be lifted from the chest wall to expose the lesion (Fig. 4). The pedunculated osteochondroma was retracted from the thoracic cage to expose the full extent of the cartilage cap. This was excised from the base, and the entire protuberance was removed (Fig. 5).

The mass was sent for histopathology, which revealed no malignant transformation at the cartilage cap. A microscopic examination revealed sections of normal bone tissue containing foci of endochondral ossification, as well as areas of haemorrhage and inflammatory cell infiltration, consistent with the diagnosis of osteochondroma. The cartilage cap measured 0.6 cm.

The patient's postoperative course was unremarkable. The complete lesion resection was confirmed radiographically, and the patient recovered a pain-free full range of motion of the shoulder with no chronic pain, swelling, or scapular winging. Postoperatively, he began rehabilitation therapy, which continued on an outpatient basis. At the 1-year postoperative follow-up, he

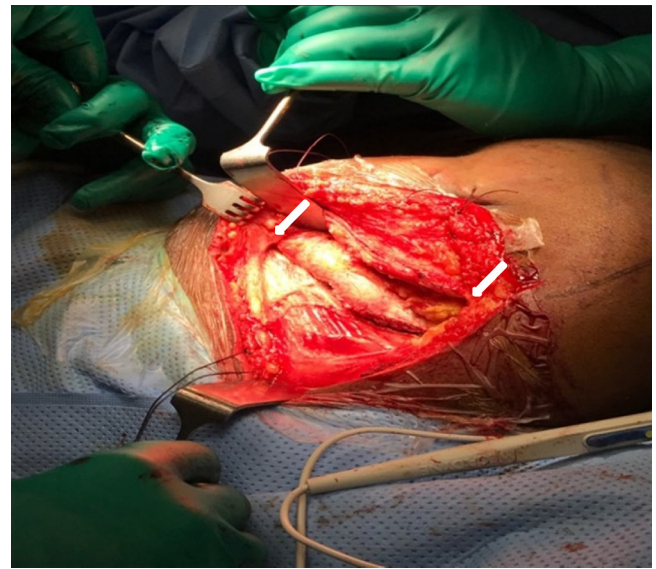


Fig. 3. Intraoperative photograph of the skin incision and the interval between the trapezius and deltoid insertions.

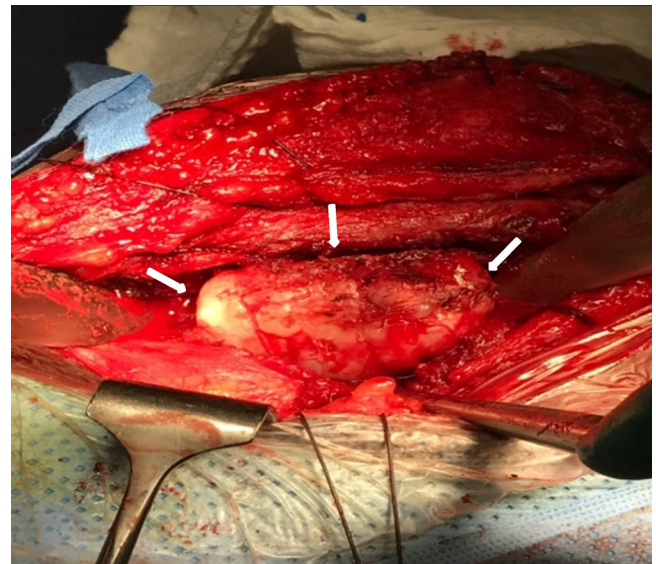


Fig. 4. Intraoperative photograph of the exposed osteochondroma.

remained well, with full shoulder mobility, no documented recurrence of symptoms, and no scapular winging, as confirmed by radiographs.

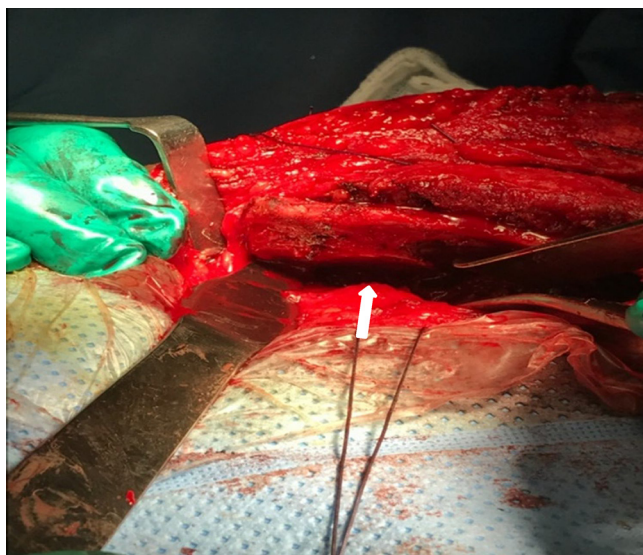
3. Discussion

Osteochondroma is defined as a cartilage-capped bony projection that arises on the external surface of a bone, contains a marrow cavity from the growth plate, and grows via endochondral ossification beneath the periosteum [6]. The World Health Organisation describes osteochondroma as the most common benign bone tumour [3], with an incidence of approximately 3% in the general population and >30% of all benign bone tumours. As noted previously, scapular involvement is rare, accounting for only 4% of cases. The vast majority of osteochondromas are identified in the first or second decade of life, as tumour growth typically ceases when the physis closes, and most are asymptomatic [3]. In contrast, our present case is distinct from typical cases in that the patient pre-

Table 1

Illustrate the differences between the similar rare cases of scapular Osteochondroma.

Author	Gender	Age of presentation	Winging	Localization	Size
Kwon OS [4]	Female	56 years	No	Superomedial region of ventral scapula	2.5 × 7 cm
Aalderink K [5]	Female	Mid-20	Yes	Lower part of ventral scapula	3 × 2.5 cm
Mohsen MS [7]	Male	19 years	Yes	Medial border of ventral scapula	6 × 5 × 3 cm
Tittal P [8]	Male	23 years	Yes	Superomedial region of ventral scapula	3 × 2 × 1 cm
Nascimento AT [9]	Female	21 years	No	superomedial region of Anterior scapula	unmeasured
Alatassi (2017)	Male	30 years	Yes	Inferior border of ventral scapula	5 cm × 5 cm × 2 cm

**Fig. 5.** Intraoperative photograph of the scapula after excision of the osteochondroma.

sented with a symptomatic scapular lesion in his fourth decade of life, and had not observed a growing lesion during maturation (Table 1).

Osteochondromas are usually found incidentally, as these lesions tend to present as asymptomatic, slow-growing masses on the involved bone. However, some complications, such as a fracture at the base of the lesion stalk, bursal inflammation, or bony deformity may cause significant symptoms such as pain, swelling, or joint problems [6]. Our patient presented with chronic pain, swelling over the left shoulder and scapular winging with no history of trauma. Despite these signs and symptoms, the lesion was on ventral aspect of the scapula and projected internally. Therefore, it could not be palpated and was discovered only with radiological assistance.

A review of the literature regarding osteochondroma of the scapula revealed that most lesions are located along the scapular equator, whereas those originating at the inferior part of scapula tend to be larger in size due to a lack of space restriction [8]. Furthermore, some cases are misdiagnosed as scapular winging, without determining that actual cause is an internally projecting osteochondroma. In our case, the scapular lesion grew inferiorly on the most distal part of the infraspinous fossa. This lesion was relatively larger than other reported osteochondromas and involved swelling at the inferior part of the scapula, leading us to suspect a static cause behind the scapular wing.

A diagnosis of osteochondroma is mainly based on clinical and radiological imaging findings, and confirmed via histopathology [4,9]. In our patient, histology revealed endochondral ossification with a cartilage cap, and CT revealed a large, mushroom-shaped exostosis in the ventral aspect of the left scapula with internal projection to the thoracic junction. These findings explain the patient's symptoms, as tumours arising from the ventral surface of the

scapula cause pain and scapular winging, with limited shoulder abduction.

Osteochondroma is generally treated surgically unless the skeleton is immature. Although different resection techniques for scapular lesions have been described in the literature, all reports agree that resection should include the whole lesion with its stalk, if present. Nascimento described a minimally invasive approach that is theoretically preferable to open surgery, as the former approach involves a small open wound, minimal dissection, and preservation of muscle attachments, which would reduce the need for immobilization postoperatively and during rehabilitation [8]. By contrast, Kwon suggested that the open technique surgery is preferable and reported successful results and significant improvement of the patient's mechanical symptoms following the excision of a lesion at the ventral aspect of the scapula [4]. Our current patient was treated using a similar technique to that described by Kwon [4], and achieved a complete resolution and relief of symptoms, with a full range of motion in his affected shoulder.

4. Conclusion

We have described a rare case of ventral-side scapular osteochondroma associated with different signs and symptoms, including scapular winging and positive radiological findings. This lesion was removed surgically, and a follow-up indicated complete symptom relief with no history of recurrence. By reporting this case, we aim to increase the awareness of unusual manifestations of osteochondroma, particularly in terms of site, age of onset, and atypical presenting signs and symptoms. Additionally, we have presented the details of all surgical steps to assist other surgeons who face similar cases.

Declarations of interest

None.

Funding

No specific grant from funding agencies in the public, commercial, or not-for-profit sectors was received for this work.

Ethical approval

We have reported a single case and ethical approval have been taken from our institution with valid reference number and without any conditions.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Saeed Koaban, surgeon: reviewed the final version of the manuscript.

Raheef Alatassi, surgeon: performed the literature review and data collection, designed the manuscript, and contributed to manuscript writing.

Ismaeel Almugebel, surgeon: contributed to manuscript writing.

Abdullah Alshehri: performed data collection.

****This version had been read by all the authors who also bear responsibility for it. The material presented is original and all authors agreed upon their inclusion. This manuscript has neither been published nor submitted to another journal.**

Guarantor

Raheef Alatassi.

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