



Case report

Snapping scapula. Arthroscopic resection of osteochondroma of the subscapularis superomedial angle. Case report and literature review[☆]



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ABSTRACT

Snapping scapula syndrome has several etiologies, including subscapular osteochondroma. When this tumor needs to be removed, this can be done arthroscopically, a procedure that has restricted indications. The authors present a case of a patient with superomedial subscapular osteochondroma who underwent a scapulothoracic arthroscopy for its removal.

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Ressalto de escápula. Ressecção artroscópica de osteocondroma subescapular da região superomedial. Relato de caso e revisão da literatura

RESUMO

A escápula em ressalto é uma síndrome com diversas etiologias, entre elas o osteocondroma subescapular. Quando esse tumor necessita ser retirado, é possível fazê-lo por via artroscópica, um procedimento que apresenta indicações restritas. Os autores apresentam neste artigo o caso de uma paciente com osteocondroma da região superomedial da face ventral da escápula, submetida a procedimento cirúrgico por artroscopia escapulotorácica para sua retirada.

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Introduction

Snapping scapula is a disorder that varies in its clinical manifestations from a mild to a limiting disorder, characterized by scapulothoracic movements that produce an audible and/or palpable crackling, pain, and snapping sensation.¹

Many causes have been suggested for this syndrome. One of them is repeated shoulder movement, which produce microtraumas and a local bursitis that can generate a bony spur at the level of the muscular insertion in the scapula and subsequent crepitus.²

Occasionally, there is no identifiable cause. Structural abnormalities that may lead to this syndrome include scoliosis, thoracic kyphosis, bony prominences (such as Luschka's tubercle), abnormal curvature of the superior scapular angle, Sprengel deformity, vertebral border bulging, subscapular rib irregularities, subscapular rib exostosis, osteogenic sarcoma, and osteochondroma.³

Osteochondroma is the most common benign tumor of the bone, accounting for approximately 35% of benign bone tumors and 9% of all bone tumors. This tumor is often diagnosed incidentally, as most are asymptomatic, but it may cause mechanical symptoms depending on location and size.⁴

In an extensive review of the literature, Carlson et al.³ identified 89 cases of snapping scapula syndrome reported between 1867 and 1996. Scapular osteochondroma was the cause of 16% (14 cases).

Scapulothoracic arthroscopy is a procedure with limited indications. Few articles have been published on the subject, and they refer to case reports and series with a reduced number of patients. The current indications for this procedure are snapping scapula syndrome, scapulothoracic bursitis, foreign body resection, benign tumor resection, and treatment of chronic pain refractory to conservative treatment.⁵

The arthroscopic anatomy was described in the study by Ruland et al.,⁶ stipulating safe portals and avoiding injury to neurovascular structures. The scapulothoracic joint has two triangular spaces, the serratus anterior space and the subscapular space, which are divided obliquely by the anterior serratus muscle. The limits of serratus anterior space include the anterior serratus muscle posteriorly, the rhomboid muscle medially, and the thoracic wall anteriorly. In the subscapular space, the anterior serratus muscle is located anteriorly, the subscapularis muscle posteriorly, and the axilla laterally.

In the arthroscopic procedure, patient is placed in prone position, with the arm in full internal rotation and shoulder extension (chicken wing position) to increase the scapulothoracic space. The initial entrance portal is located medial to the scapular angle immediately below the level of scapulothoracic spine, 3 cm from the medial border of the scapula; a second portal is positioned approximately 4 cm below the first portal to prevent damage to the nerve, the dorsal scapular artery, and the spinal accessory nerve, as well as to allow a perpendicular orientation relative to the chest wall. To access the superior angle of the scapula, it may be necessary to create a portal superiorly to the scapula.⁶

Case report

A female patient, 21 years of age, university student and horseracing practitioner, complained of pain and crepitation of the scapula for three years. She was attended to at several services, with a diagnosis of paraescapular dyskinesia; during that time, she underwent physiotherapy without improvement of the condition.

At physical examination, she presented normal range of motion, but with audible and palpable crepitus, even in passive movements.

A radiograph of the scapular region showed a bone tumor at the anterior border of the scapula (Fig. 1). The investigation was complemented with computed tomography and magnetic resonance imaging (MRI; Fig. 2), and the diagnostic hypothesis of osteochondroma was reached.

Then, patient underwent a surgical procedure for arthroscopic removal of the tumor (Fig. 3), according to the technique described by Ruland.⁶ One portal was created at the level of the scapular spine in the spine of the level of the scapula and the other portal at 4 cm below the first portal, maintaining a distance of at least 3 cm from the medial border of the scapula. There was no need to use the superior portal, which is an option when it is necessary to access the superomedial region of the scapula. The tissue sample was sent for anatomopathological analysis, which confirmed the diagnosis of osteochondroma. Postoperative radiography and tomography were performed (Fig. 4), which showed successful removal of the tumor, with excellent esthetic appearance (Fig. 5). Eight months postoperatively, patient presented a



Fig. 1 – Radiograph in scapular profile showing a bony tumor on the ventral face of the scapula.

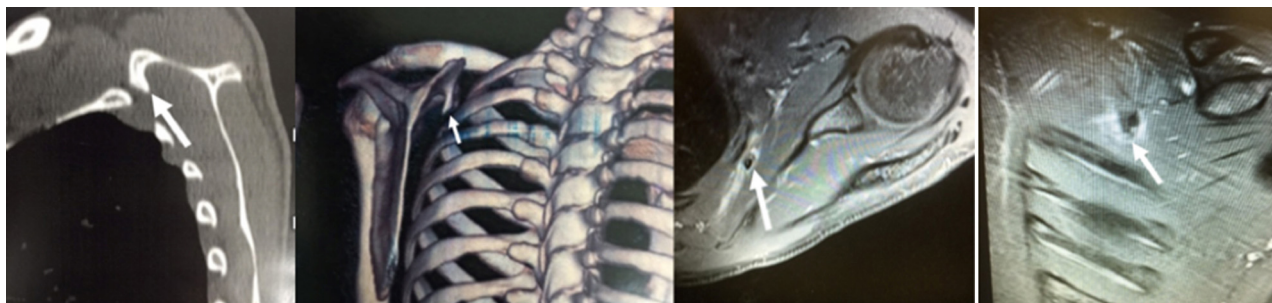


Fig. 2 – Tomography showing bone tumor in the superomedial region of the scapula, in close contact with the costal arches, and magnetic resonance imaging showing osteochondroma “perforating” the subscapularis muscle (white arrow).

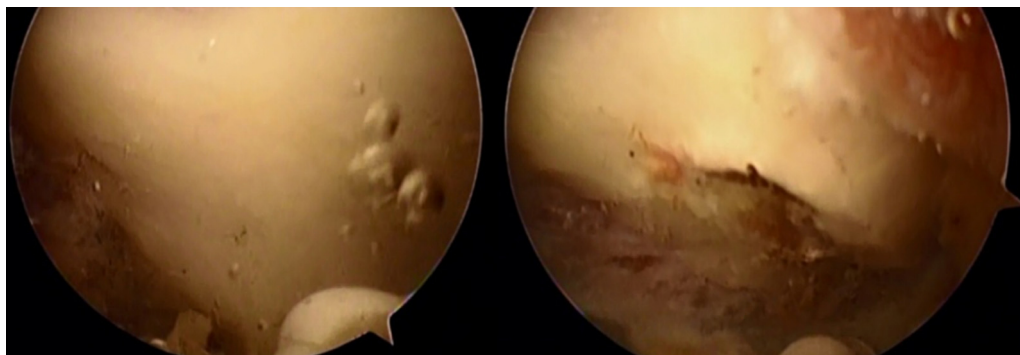


Fig. 3 – Intraoperative images before and after the tumor removal procedure.

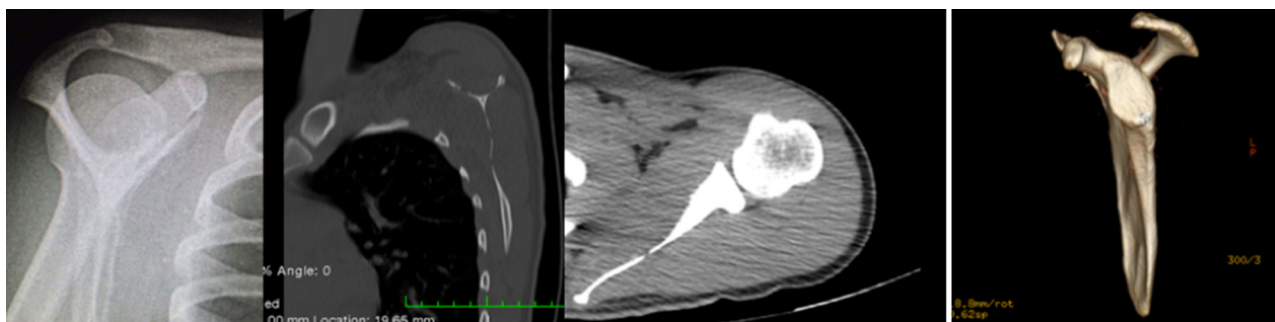


Fig. 4 – Postoperative radiograph and tomography showing successful removal of the entire tumor.

significant improvement in the applied scores. The Disabilities of Arm, Shoulder and Hand (Dash) score decreased from 43.3 preoperatively to 0.83 postoperatively. The University of California at Los Angeles (UCLA) score increased from 22 preoperatively to 35 postoperatively. The visual analog scale (VAS) decreased from 6 in the preoperative period to 0 in the postoperative period.

Discussion

Snapping scapula is a disorder that varies in its clinical manifestations from a mild to limiting disorder. Many causes have been suggested for this syndrome, and osteochondroma accounts for approximately 15% of cases.⁷ Osteochondroma is the most common benign bone tumor, accounting for approximately 35% of the benign tumors and 9% of all tumors. This tumor is often diagnosed incidentally, as most are asymptomatic, but may cause mechanical symptoms, depending on

location and size.⁴ Despite being the most common benign tumor that affects the scapula, it is rarely observed in this location.⁸ It is commonly found in young patients, generally aged below 30 years, with a male:female ratio of 1.5:1.⁹

When reviewing the cases described in the literature, there was only one case retrieved in which the location of the osteochondroma occurred in the superomedial region of the scapula.¹⁰ All other cases were located at or below the equator of the scapula. Thus, this case becomes of special presentation.¹¹ Tumors of the inferior scapular region usually reach larger sizes, due to the space they have to develop; depending on the size, they can preclude arthroscopic resection.¹² Although technically complex, arthroscopic surgery for snapping scapula syndrome offers several theoretical advantages over open surgery. These include minimizing the dissection, preserving muscle attachments, and thereby eliminating the need for immobilization in the postoperative and rehabilitation period.¹³



Fig. 5 – Esthetic aspect of the arthroscopic scapulothoracic surgery.

The present patient had an osteochondroma with particular characteristics, due to its superomedial position and its close contact with the second costal arch. As it is possible to observe in the tomography, its growth took the form of a hook, probably due to the mechanical effect of wear on its surface, which was in constant friction with the costal arch. Another peculiarity that was observed at the MRI is that the tumor advanced through the subscapularis muscle, not repelling it, but instead puncturing it, which increased the difficulty of localization and resection of the lesion.

Scapulothoracic arthroscopy is a procedure that has been increasingly performed in orthopedic practice, allowing the treatment of pathologies that affect the scapula in an effective and minimally invasive approach.¹² Similarly to the present report, many studies have demonstrated excellent results in osteochondroma resections of the ventral region of the scapula through scapulothoracic arthroscopy.^{14,15}

Based on the review of the literature and observation of the present case, it can be concluded that scapulothoracic arthroscopy is a new procedure with limited indications, but with good effectiveness and good final esthetic appearance.

Conflicts of interest

The authors declare no conflicts of interest.

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