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Case Report

Shoulder Ganglion: Arthroscopic Technique for Decompression and Fixation Associated with Injuries of the Glenoid Labrum (SLAP) Type II

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Abstract

Ganglion cyst of the shoulder and concomitant suprascapular nerve compression should be considered in differential diagnosis of shoulder pain. They are associated commonly with labral tears, most commonly SLAP lesions. Despite MRI can detect atrophy, the diagnosis of suprascapular nerve compression can be confirmed only by EMG/NCS. Arthroscopic techniques have evolved to allow decompression of the ganglion cyst and repair of the labral lesions.

Keywords: *Ganglion cyst; SLAP (Superior Labral Anterior to Posterior); MRI (Magnetic Resonance Imaging); EMG/NCS (Electromyography, Nerve Conduction Velocity)*

Introduction

Pain in the shoulder is a common symptom by which patients seek medical assistance. The differential diagnosis includes tendonitis, osteoarthritis, adhesive capsulitis, pathology of the biceps and glenoid labrum, instability and cervical radiculopathy.

The ganglion of the shoulder can cause the same symptoms, particularly if the suprascapular nerve presents compression by it [1,2].

For this same situation we must always be aware of this unusual diagnosis to perform the appropriate examinations when the patient does not improve with traditional therapy.

Entrapment of the suprascapular nerve was described for the first time in the suprascapular notch by Kopell and Thompson in 1959 [3].

With the advent of magnetic resonance imaging of the shoulder, the ganglion near the superior glenoid labrum has been recognized more often, so compression of the suprascapular nerve at the level of the spinoglenoid notch has gained more attention.

More recently, the association between the lesions of SLAP (superior labral to posterior posterior) and the ganglion has led to arthroscopic techniques for decompression of the cyst and repair of the labrum [4-7].

Pathogenesis

The pathogenesis of the ganglion is not yet well defined, having as a characteristic being close to the joints. Some researchers have postulated that the lesion of the capsule can lead to the formation of a ganglion. A ganglion can form when a lesion in the capsule allows the synovial fluid to enter the adjacent soft tissues but does not allow its return, creating a one-way valve mechanism [4,5,8].

Piatt and Hawkins identified lesions in the posterosuperior shoulder labrum using magnetic resonance imaging in 63 of 75 patients with spinoglenoid cysts [6]. Moore., *et al.* found a labral lesion in 10 of 11 patients when performing arthroscopy for the treatment of a ganglion that caused nerve compression Suprascapular [4].

The suprascapular nerve is particularly susceptible to being compressed in the spinoglenoid notch because it is relatively motionless as it crosses the lateral arch of the scapular spine and is proximally to the posterior area of the glenoid, with the average distance between the posterior area of the glenoid and the suprascapular nerve 1.8 cm [7].

Anatomy

The suprascapular nerve is a mixed nerve, both motor and sensory, which is derived from the upper trunk of the brachial plexus, and is formed of C5 and C6 [9,10].

The suprascapular nerve innervates the supraspinous muscle in motor form and receives sensory signals from the coracohumeral and coracoclavicular ligaments, the acromioclavicular joint and the subacromial bursa [9,11].

Tung et al found that a cyst associated with a nerve injury has an average diameter of 3.1 cm [2].

The compression of the suprascapular nerve by a cyst in the spinoglenoid notch is very rare in women, perhaps due to the anatomical difference between genders. Kaspi., *et al.* showed that the spinoglenoid ligament only occurs in 50% of women compared to 87% of men [3].

The suprascapular nerve, which is close to the glenoid, may be injured during the excision of the ganglion. Youm described a new technique to limit the possibility of suprascapular nerve injury.

Diagnosis

Clinical evaluation

The diagnosis of suprascapular nerve compression secondary to a ganglion can be difficult to perform with clinical and physical examination only. The compression that the ganglion makes to the nerve at the level of the spinoglenoid notch can cause a significant nerve injury of the infraspinatus muscle only, while a ganglion that performs compression at the level of the suprascapular notch can cause nerve damage at the level of the supraspinatus and infraspinatus muscles.

The physical examination should be careful and we should always check the posterior musculature of the shoulder, as well as possible atrophy of the supraspinatus.

We usually have a history of trauma or overuse, especially activities that require maneuvers over the shoulder; Some sports activities involved in this pathology are baseball, volleyball, tennis, swimming, etc [11-13].

Symptoms are usually non-specific such as pain, which is exacerbated by activities above the shoulder, which can radiate to the back of the neck or to the arm. Suprascapular neuropathy pain is presented as vaguely as shoulder pain, with loss of strength to external rotation and abduction, although we should always make a differential diagnosis with rotator cuff lesions [8,14].

The patient usually describes a chronic pain and loss of strength, which becomes constant, strong and which does not allow him to sleep. They usually present pain on palpation in the posterior espinooglenoid notch or in the superior suprascapular notch. There is also localized pain in the posterior shoulder area when adduction of the shoulder is performed, as well as loss or diminution of the force when performing external rotation of the arm [8,13-15].

Auxiliary for diagnosis

Basic radiographs include AP, axillary and supraspinatus view. The increasing use of magnetic resonance in the shoulder has demonstrated the presence of cystic lesions in patients with or without symptoms of suprascapular neuropathy. The cyst appears as a well-defined lesion, with linear edges and intense hypo in the images of T1 and hyperintense in T2. Resonance is also useful for detecting intra-articular injuries such as labral lesions [7].

Cystic lesions diagnosed by magnetic resonance have been associated up to 89% with lesions of the superior labrum, usually posterosuperior [14].

In a study conducted by Chandnani., *et al.* magnetic resonance arthrography with intraarticular gadolinium contrast showed a sensitivity of 96% for the diagnosis of labral lesions, compared to 93% with simple MRI [16,17].

Chronic nerve injury usually manifests with muscular atrophy and fatty changes in MRI [18]. However, the diagnosis of nerve compression can only be confirmed by electromyography and nerve conduction velocity [1,5,10,16].

The electrophysiological evaluation of the suprascapular nerve is based on the stimulation at the Erb point, measuring the distal motor latency and the amplitude of the motor response in the supraspinatus and infraspinatus muscles. A positive electromyography is decisive [14,19,20].

Treatment

Initial treatment for paralabral cysts in the shoulder should be conservative, avoiding activities above the shoulder and other activities that may aggravate the symptoms, in addition to an accompanying physical therapy that improves flexibility, strength of the rotator cuff muscles, and of the stabilizers of the scapula [6].

We must take special care in these patients since they may present nervous compression, since the cyst may increase in size. In patients in whom the pain continues with treatment or in those in whom nerve compression is confirmed, there is a wide variety of treatments. Among these we have guided aspiration by ultrasound, tomography or magnetic resonance. Piatt et al reported an 18% failure in the aspiration of spinoglenoid cysts and a 48% recurrence in those cysts aspirated correctly [6].

Tung., *et al.* reported that three of the four patients who underwent aspiration of the cyst presented recurrence at 4 months [2]. The disadvantage of guided aspiration is the difficulty in accessing the area where the cyst is located as well as giving treatment to intra-articular lesions, which increases the risk of recurrence.

Surgical options of the ganglion include open surgery and arthroscopic technique. Traditionally, posterior via surgery for the decompression of spinoglenoid cysts has been used successfully. Its advantages are the direct visualization of the cyst and the suprascapular nerve. The disadvantage is the risk of infection of the surgical wound, muscle injury and lack of treatment for labral injuries, which in the long run can lead to a recurrence.

The combination of open and arthroscopic surgery to repair labral lesions and perform aspiration or excision of the cyst has also been described, although only arthroscopy has shown good results [4,5,8,11,16,21].

Studies have shown that remodeling or repair of the glenoid labrum is required in most patients with spinoglenoid ganglion to avoid recurrence and present an important clinical improvement [4-6,11].

Ianotti comments that in his article he presents three patients who underwent surgery, performing arthroscopy with posterosuperior capsulotomy, which at 1 year of evolution did not show recurrence in his studies performed by magnetic resonance and that all patients showed pain disappearance and regained strength to rotation and abduction of the affected shoulder [4].

Clinical Case

Name: DAFL

Age: 30 years

Original DF: Mexico

P.A: refers aggression by third parties on June 13, 2007 with multiple trauma evolves with persistent cervicobrachialgia and shoulder pain despite rehabilitation treatment, after two months of the initial injury presents with persistent pain accompanied by dysesthesia in the injured limb, active mobility arcs limited for abduction and external rotation, pain in the scapula der sp, magnetic resonance imaging study and electromyography (Figures 1-4) that is reported with mild axonotmesis of suprascapular nerve and spinoglenoid cyst, is performed arthroscopic surgical treatment 4 months after the initial injury.

Figure 1: *Approach of the monitor visualizing the needle.*

Figure 2: *Paralabral cyst in AP projection.*

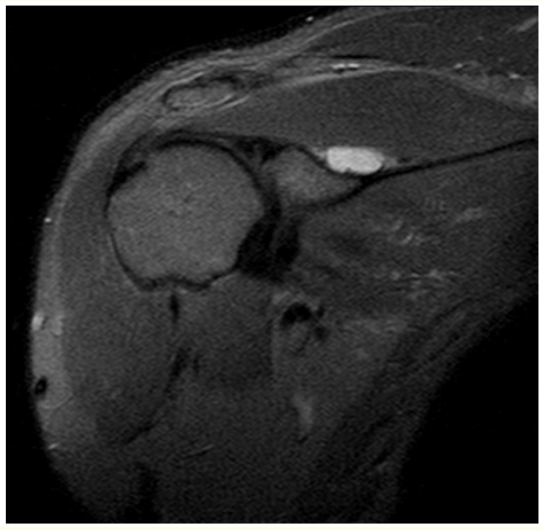


Figure 3: *Cyst and posterior superior runner injury.*

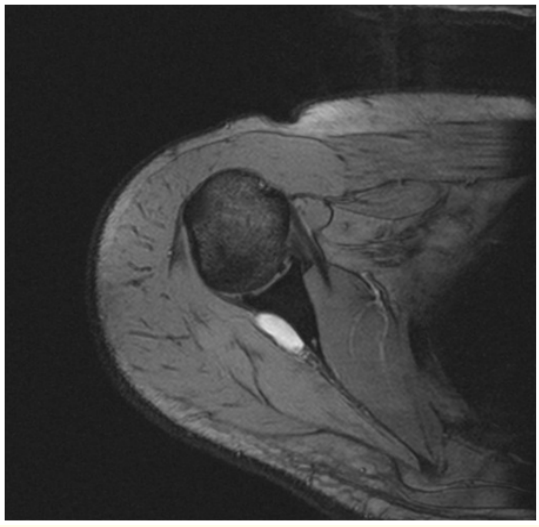


Figure 4: *Axial projection with posterior cyst and impeller interposed in the joint.*

Surgical technique

The treatment performed on our patient was conveniently with arthroscopic exploration, location of the SLAP lesion, which is corroborated type II with subsequent prolongation. Once this has been determined and without visualizing the cyst feeding valve arthroscopically, we proceed with a spinal needle to aspiration in the supraglenoid fossa (Figure 5) at the location of the Neviaser portal until aspiration of the contents of the cyst proceeds to deepen the puncture (Figure 6 and 7) passing below the posterior glenoid rim, a lateral portal

is made and through this an exploratory hook is inserted to retract the labrum that was found mounted on the glenoid and prevented to visualize the lesion widely, the soft tissue shaver is introduced through the anterior portal and debridement of the cyst is performed, deepening up to 2 cm taking as reference the upper edge of the glena. Once this is achieved after haemostasis, the SLAP lesion is repaired with three titanium 2.7 anchors, one of which is lost due to rupture of the suture.

Figure 5: *Aspiration with Touy needle via Naveaiser portal.*

Figure 6: *Deepening of the needle below the glenoid impeller.*

Figure 7: *View of the monitor visualizing the needle below the glenoid impeller.*

Postoperative treatment

Early mobilization of the shoulder with pendular exercises and mobilization request with abduction and flexion, keeping the elbow in 90 degrees of flexion, not allowing the extension of the shoulder until three weeks, the free mobilization is maintained until six weeks without weight load and reintegration to its full activities at 12 weeks, two new postoperative months of the shoulder are requested, finding postoperative changes with absence of cystic formation and image corresponding to the 3 anchors with fixation of the SLAP lesion adequately, and electromyography in ERB point reporting normal (Figure 8-10).

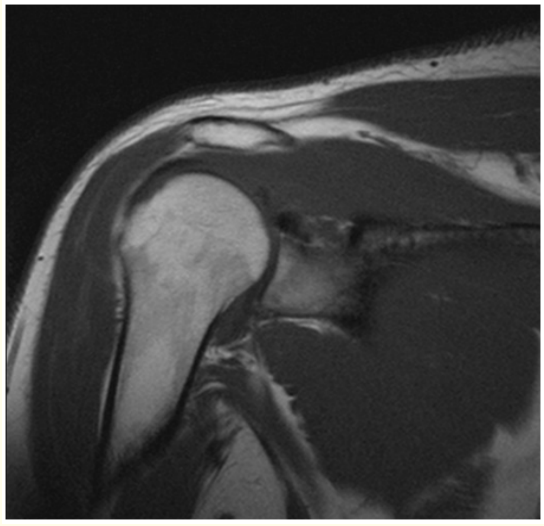


Figure 8: *Postoperative control with postoperative changes in the cyst site and anchor in the glenoid.*

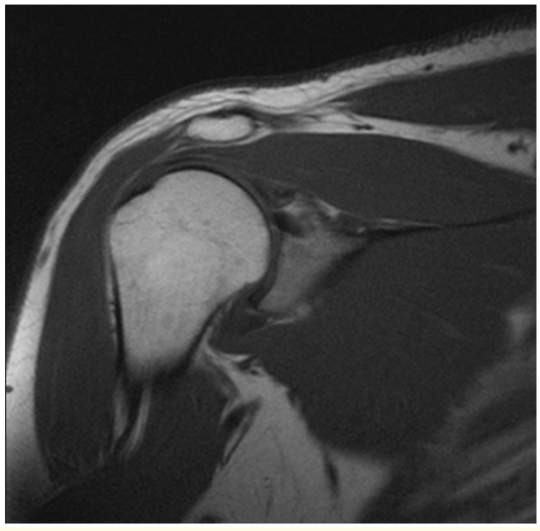


Figure 9: *Reconstruction of superior labrum and absence of cyst.*

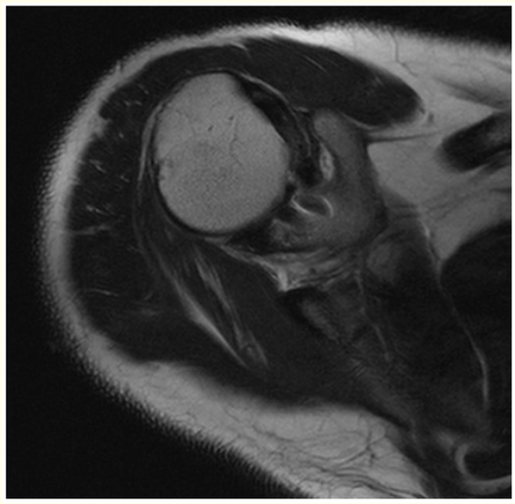
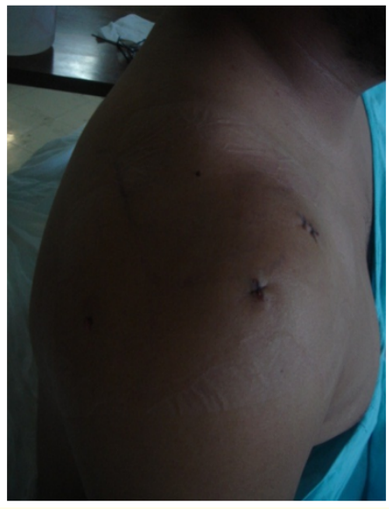


Figure 10: *View with absence of cyst and anchors in the glenoid.*

Complementary clinical images of the postoperative



Immediate postoperative portals.

Immediate postoperative ABD.

Postoperative two months.

Discussion

Given different treatment possibilities for this pathology described from aspiration of the cyst with relapse of the same due to the lack of treatment of the glenoid rim lesion, or open resection of the cyst with the frequent neurological and muscular complications that may occur, in the Nowadays, arthroscopic management is widely justified to repair the glenoid ridge lesion undoubted origin of cystic formation by forming a one-way communication between the joint and the cyst, with the challenge of simultaneously treating the cyst for which the aspirate is proposed. supraspinal, thus locating the cyst with the possibility of joint debridement.

Westerheide reported the results of 14 patients treated with arthroscopic ganglion decompression and labral repair. All the patients presented labral lesions (which were repaired during the surgery) and likewise all the patients presented preoperative rotational weakness. 51 months after surgery, all showed improvement in external rotation and improvement in physical examination of the shoulder.

Conclusions

The compression of the suprascapular nerve has important clinical implications with the presence of atrophy and weakness of the supraspinatus and infraspinatus muscles. All new techniques offer important advantages over traditional open technique, offering the advantage that other shoulder pathologies can be treated at the same time.

This case is particularly satisfactory for achieving arthroscopic treatment without the need to make a window in the posterior capsule as described in the literature [22] in such a way that when aspirating by supraspinal route, the cyst is easily located and when the needle is deepened below the posterior impeller, allows joint placement and subsequently debridement of the cyst [21] concluding the procedure with the repair of the SLAP lesion.

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