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Treatment option in a SLAP-related ganglion cyst resulting in suprascapular nerve entrapment

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Abstract *Introduction:* Our report shows a rare case of suprascapular nerve palsy due to a SLAP-related ganglion cyst resulting in isolated weakness of the infraspinatus muscle. *Case report:* We report on a 31-year old volleyball player with severe shoulder pain. A ganglion cyst was excised in an open procedure and was completely resolved in a postoperative magnetic resonance imaging (MRI). But the patient again had pain and disability 7 months after this procedure. A renewed MRI scan showed a cystic mass in the spinoglenoid notch. An electromyography revealed an isolated lesion of the suprascapular nerve. The patient was treated by shoulder arthroscopy with refixation of a type-II-SLAP-lesion and drainage of the cyst formation. At latest follow-up 29 months after surgery, the patient's pain and shoulder function improved with a constant score of 94 points. A MRI scan documented complete cyst resolution. *Conclusions:* Treatment options for ganglion cysts at the spinoglenoid notch are various and can be handled in conservative and operative ways. We believe that the arthroscopic concept with the management of a SLAP lesion as the cause of cyst formation, and the drainage of the ganglion is an effective way with low surgical morbidity that shows good postoperative results.

Keywords Ganglion cyst · Suprascapular nerve entrapment · SLAP · Arthroscopy

Introduction

The relationship of lesions at the spinoglenoid notch to suprascapular neuropathy beneath the spinoglenoid ligament has been well documented in the literature [4, 6, 11, 16]. This entity as a cause of shoulder pain and dysfunction is uncommon and therefore easily overlooked but should be included in differential considerations [13]. A thorough anatomical knowledge of the course of the suprascapular nerve is important to understand the causes of this neuropathy. Two critical points have been identified along the way of the suprascapular nerve. One is the suprascapular notch and the other, the lateral edge of the spine. In the spinoglenoid notch the nerve can be palsied by a hypertrophied spinoglenoid ligament, which often occurs in athletes who repetitively stress their shoulder [1]. Another mechanism is compression by a mass, most commonly a ganglion cyst, which can be characterized by an isolated atrophy of the infraspinatus muscle. The objective of this report is to discuss methods of treatment in patients with SLAP-related ganglion cysts and to demonstrate a practicable minimal-invasive treatment option.

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Case report

A 31-year-old right-hand dominant male (Volleyball player in the German second division) presented a history of non-specific increasing shoulder pain accompanied by weakness that was worse at night and spread to the upper arm. He had undergone open shoulder surgery by a posterior approach in line with the scapular spine with the excision of a ganglion mass of the spinoglenoid notch. Pain resolved postoperatively and a magnetic resonance imaging (MRI) showed complete resolve of the ganglion cyst. Seven months later the patient com-

plained of increased shoulder pain. He was treated by physical therapy and NSAIDs but a lack of significant improvement got him to our clinic 10 months after primary surgery. Physical examination showed an isolated infraspinatus atrophy and 4/5 external rotation strength. There was no clinical sign of instability. The cross-adduction test and the active compression test of O'Brien were positive. Clinical examination was rated according to the score of Constant and Murley within 72 points. Electromyography (EMG) showed an isolated lesion of the suprascapular nerve supplying the infraspinatus muscle. A MRI scan was prompted. It showed a 3×4 cm cystic mass in the spinoglenoid notch lifting up the supraspinatus muscle. No signs of a rotator cuff- or labral tear could be determined (Fig. 1a, b). One could foresee a destitute of flap mechanism with liquid hem to intraarticular (Fig. 1a). The patient underwent right shoulder arthroscopy. A posterior labral fraying and a type-II-SLAP-lesion were detected (Fig. 2a, b), which was refixed with two suture anchors. In the same procedure the cyst was drained by manual pressure on the infraspinatus fossa using a probe to keep the valve open. Postoperatively, the patient's pain completely resolved. After a follow-up now of 29 months, the constant score improved to 94 points (Fig. 3). EMG was normal and the MRI scan showed no recurrence of the ganglion.

Discussion

SLAP lesions may lead to extravasation of joint fluid under the labrum and into the region of the spinoglenoid notch. Incomplete healing of a labral tear is hypothesized to result in a one-way valve with continuous synovial fluid efflux [5, 15]. The absence of muscle or tendon overlying in this region is then conducive to cyst formation. A close clinical examination should be performed including inspection and strength testing of the involved muscle groups [13]. A MRI may be helpful to identify the cyst as well as related glenoid labral pathology [9]. Chen et al. [2] noted that several authors have seen an association between these cyst formations and superior labral pathology, even when the labral disruption is not evident on MRI [7, 15]. An EMG completes the diagnostic procedure. The management for spinoglenoid cysts described in the literature is different and varies from conservative [16] to operative treatment [2, 5, 11]. Some authors describe a resolution by aspiration guided by ultrasound as a less invasive method [3, 10]. But we think that surgical treatment is indicated for cases with compression neuropathies. Merely an open surgical procedure is detrimental because the glenohumeral joint is not directly assessed. Therefore intra-articular pathology as a potential origin of the cyst cannot be identified. This may increase the risk of recurrence of the cyst as verified in our case. Other authors prefer an arthroscopic evaluation followed by open excision of the cyst lesion [5]. But the open management includes a large exposure with an

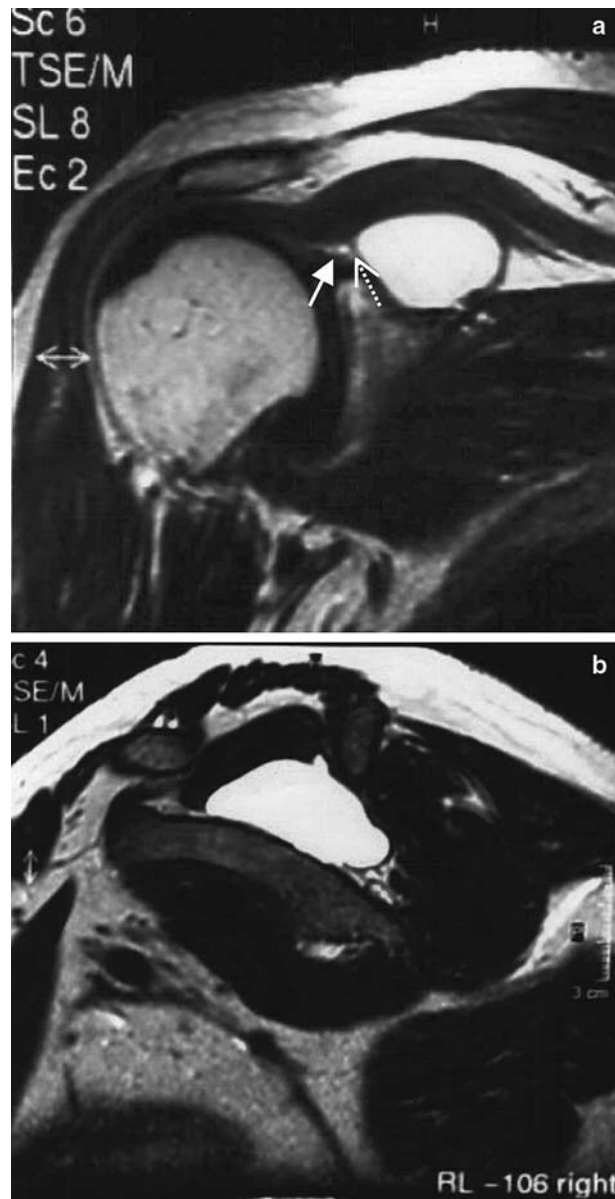


Fig. 1 a, b Preoperative T2-weighted paracoronal (a) and transversal (b) magnetic resonance imaging showing a cystic formation with a foreseeing destitute of flap mechanism (white dotted arrow) with liquid hem to intraarticular (white arrow) lifting up the supraspinatus muscle

increased morbidity as an adverse aspect and should be retained for patients who do not respond to a minimal invasive treatment. Our case highlights several facets of the therapy of spinoglenoid cysts. It shows the correlation between a SLAP lesion and the growth of a ganglion cyst as previously shown in cysts involving the knee [8, 12] and confirms findings in the literature [2, 16]. They seem to occur as an effect of a periarticular appearance of an intra-articular pathology equally in the shoulder joint. That should be taken into consideration when shoulder pain is associated with atrophy of the infraspinatus muscle. In addition, we found that a single open excision of the cyst is not sufficient. This endorses

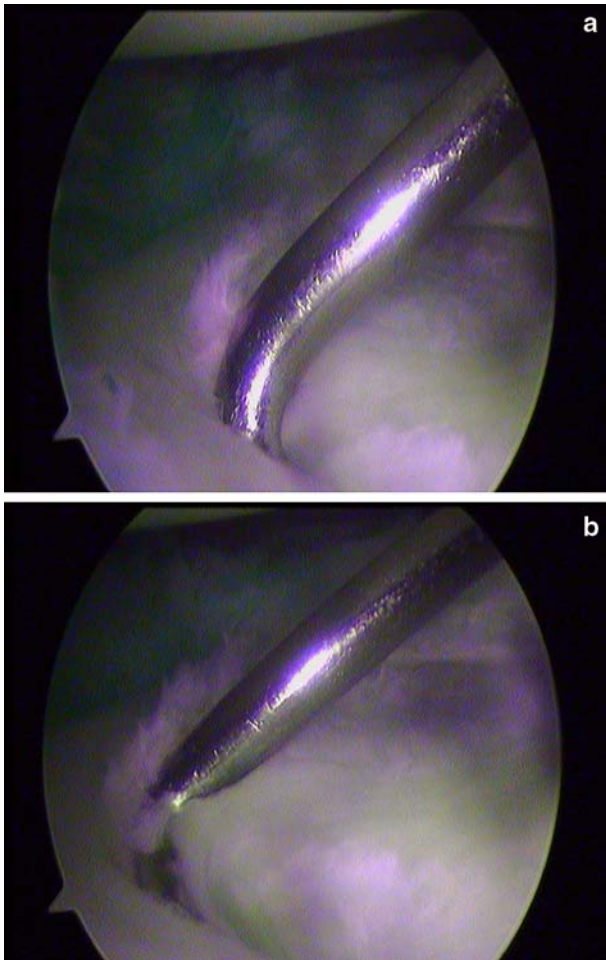


Fig. 2 a, b SLAP-lesion with a posterior labral fraying. The labrum glenoidale can be distinguished with a probe

findings that a simple excision without repair of the intra-articular damage results in a high rate of cyst recurrence [14]. In case of a documented spinoglenoid

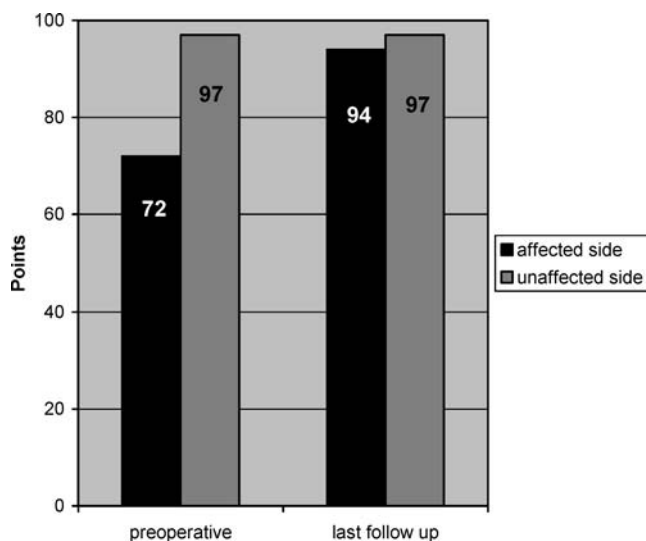


Fig. 3 Constant and Murley score data pre-/postoperative

cyst in a MRI, labral pathology should be mentioned even if the MRI does not show such a lesion. Reconstruction of the labral tear must be performed to treat the causal pathology. In such cases the arthroscopic procedure including the drainage of the cyst should be preferred to treat both entities, the defect of the labrum and the ganglion cyst, to attain good postoperative results.

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