

## Case 2 Case 2 [2010]

A 45-year-old man presented with right shoulder pain. Radiographs of the right shoulder were unremarkable. Magnetic resonance imaging revealed a lesion

**Your Diagnosis?**

## **Diagnosis: Paralabral cyst with labral tear**

MRI demonstrated the presence of cystic lesions. A cyst appears as a well-defined, smoothly marginated mass with low signal intensity on T1 images, which are better seen as high signal intensity masses on T2 images. MRI is also helpful for detecting associated intra-articular lesions such as labral pathology.

### **Peri-articular cystic lesions**

1. **A paralabral cyst** is a sequela of a glenoid labral tear.

It is typically seen adjacent to the glenoid labrum, but can extend to the suprascapular or spinoglenoid notch, where it may compress the suprascapular N

2. **An acromioclavicular cyst** is found superior to the acromioclavicular joint. It is caused by a leak of glenohumeral joint or bursal fluid through a full-thickness rotator cuff tear into the acromio-clavicular joint that subsequently leaks into the superficial tissue.

3. **An intramuscular cyst/ganglion** of the shoulder is located within the substance or sheath of rotator cuff muscles. It is unilocular or multilocular, and is oblong and oriented along the long axis of the involved muscle fibers. It has low signal in T1-weighted images and high signal in proton density weighted and T2-weighted images. Kassirjian evaluated 32 intramuscular cysts, of which 31 were associated with cuff tears, 16 (50%) partial thickness, and 15 (47%) full-thickness. In a majority of patients (77.4%). The infraspinatus was the most common muscle involved in an isolated cyst (52.2%). Of the supraspinatus tears (75 patients), 34.7% (26/75) had a cyst in the supraspinatus tendon, but 65.3% (49/75) had an intramuscular cyst in the infraspinatus tendon.

### **Discussion**

Ganglion cysts of the shoulder can present with many of the same symptoms as the more common conditions described, particularly if the suprascapular nerve is compressed by the ganglion cyst.

Awareness of this uncommon cause of shoulder pain to make an accurate diagnosis and to pursue appropriate diagnostic tests when the patient does not improve is important.

Suprascapular nerve entrapment was first described at the suprascapular notch by Kopell and Thompson in 1959. Then in 1982 Aiello et al described entrapment at the spinoglenoid notch as a more common cause of suprascapular neuropathy. With the advent of shoulder MRI, ganglion cysts adjacent to the superior labrum have been increasingly recognized. More recently the association between superior labral anterior to posterior (SLAP) lesions and ganglion cysts has been widely studied.

### Pathogenesis

A ganglion may develop when a capsule-labral tear allows synovial fluid to enter into the adjacent soft tissues but not to return, creating a one-way-valve mechanism.

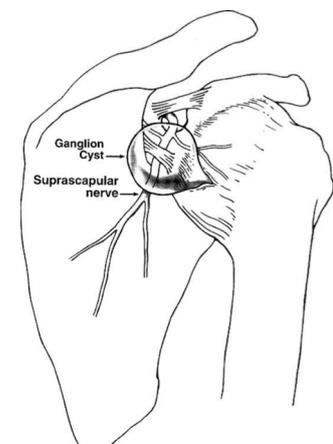
The suprascapular nerve is particularly susceptible to compression at the spinoglenoid notch, because it is relatively immobile as it traverses the lateral edge of the scapular spine and it is in close proximity to the posterior glenoid. Bigliani et al showed in their cadaveric study that the average distance from the posterior glenoid rim to the suprascapular nerve was 1.8 cm.

### Anatomy

The suprascapular nerve is derived from the upper trunk of the brachial plexus, formed by C5 and C6 roots at Erb's point.

The nerve travels through the posterior triangle of the neck, deep to the brachial plexus and trapezius, and enters the supraspinatus fossa through the supraspinatus notch. The nerve passes below the superior transverse scapular ligament, whereas the suprascapular artery and vein travel above the ligament.

It supplies supraspinatus muscle and receives sensory afferent signals from joints and ligaments. The suprascapular nerve continues around the scapular spine, through the spinoglenoid notch. Here the inferior transverse ligament relatively fixes the nerve in location. Even small cysts therefore can cause compression. After passing through the spinoglenoid notch, the nerve then terminates by giving two to four motor branches to the infraspinatus.



## **Clinical evaluation**

1. Denervation of the infraspinatus muscle only
2. There is often a history of trauma or some type of overuse, particularly overhead activity.
3. Sports activities that have been implicated are volleyball, baseball, tennis, swimming, and weight lifting
4. Complaint is often nonspecific pain that is exacerbated by overhead activity.
5. The pain may radiate medially and upward into the neck and down the arm.
6. Given its rarity, the lack of reproducible signs on physical examination, and the overlapping symptoms with other shoulder problems, however, this disorder is easily overlooked
7. 0.4% incidences

The patient often describes chronic pain and weakness that becomes constant, severe, and interrupts sleep. Patients may have pain to palpation in the spinoglenoid notch. Cross-body adduction has been described to localize pain to the posterior shoulder. Labral lesion signs such as painful catching or locking may be present if there is an associated labral tear.

Patients may present with painless infraspinatus wasting because the sensory portion of suprascapular nerve may be unaffected

Patients often exhibit weakness on resisted external rotation testing.

## **Diagnostic imaging**

1. Plain radiographs, including AP, axillary, and supraspinatus outlet views: T.R.O
2. MRI :demonstrated the presence of cystic lesions. A cyst appears as a well defined, smoothly marginated mass with low signal intensity on T1 images, which are better seen as high signal intensity masses on T2 images. MRI is also helpful for detecting associated intra-articular lesions such as labral pathology.
3. MRA with gadolinium injected intra-articular was shown to have a sensitivity of 96% for detecting labral tears. Tung identified 60% of labral tears with paralabral cysts by standard MRI. The paralabral cyst is probably a secondary sign of a labral tear in most patients, requiring treatment of the labral pathology to minimize recurrence.

Chronic degeneration often manifests as muscle atrophy, with fatty change on MRI.

This is best seen on T1 spin-echo images as increased signal intensity within the muscle.

4. EMG and nerve conduction velocity (NCV) : should be ordered in conjunction with an MRI, because the cause of the nerve compression cannot be determined by MRI alone. Electro-physiologic evaluation of the suprascapular nerve is based on stimulation at Erb's point and measuring motor distal latency and motor response amplitude at the supraspinatus and infraspinatus muscles.

Unfortunately in some cases EMG can be normal despite suprascapular nerve compression.

## **Treatment**

The initial treatment for paralabral cysts of the shoulder should be nonoperative. Patients should be advised to avoid repetitive overhead activities.

A physical therapy program should be prescribed that improves flexibility, strengthens the scapular stabilizers, and eventually the rotator cuff muscles.

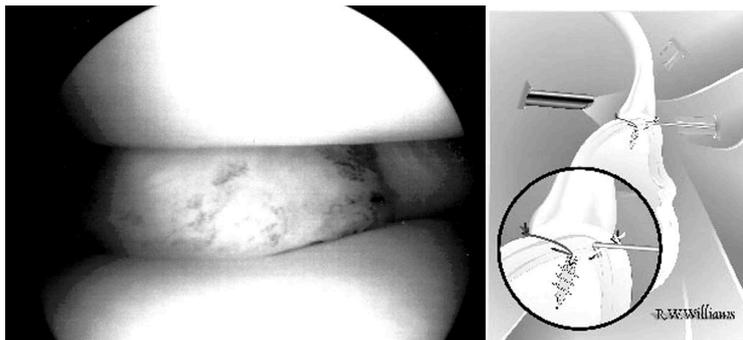
It is possible for cysts to disappear spontaneously.

In the patient who continues to have pain despite conservative therapy or who has confirmed nerve compression, there are a variety of treatment options.

Aspiration: 18% failure rate for aspiration of spinoglenoid cysts and 48% recurrence rate for those cysts

Surgical options for treatment of ganglion cysts of the shoulder include open and arthroscopic techniques. The disadvantage of the open procedure, however, is the morbidity of the incision, muscle detachment, and lack of labral assessment and treatment, which may lead to recurrence.

Arthroscopic treatment alone has shown good success. Studies have shown that debridement or repair of the glenoid labrum was required in most patients with spinoglenoid ganglion cysts for the best outcome and lowest recurrence



A pilot hole is made just below the biceps/superior labrum anchor. It is important to visualize this hole to ensure that it is in bone and does not skive posteriorly. This pilot hole is not placed on the articular surface rim, as it is for anterior instability, but just below the articular margin. A screw-in anchor is loaded with two strands of #2 braided suture and inserted into the superior glenoid just below the biceps tendon.

### **Summary**

Suprascapular neuropathy has often been overlooked as a source of shoulder pain. The condition may be more common than once thought as it is being diagnosed more frequently.

Etiologies for suprascapular neuropathy may include repetitive overhead activities, traction from a rotator cuff tear, and compression from a space-occupying lesion at the suprascapular or spinoglenoid notch.

Magnetic resonance imaging is useful for visualizing space-occupying lesions, other pathological entities of the shoulder, and fatty infiltration of the rotator cuff.

Initial treatment of isolated suprascapular neuropathy is typically nonoperative, consisting of physical therapy, nonsteroidal anti-inflammatory drugs, and activity modification; however, open or arthroscopic operative intervention is warranted when there is extrinsic nerve compression or progressive pain and/or weakness.