

Arthroscopic Aspiration and Labral Repair for Treatment of Spinoglenoid Notch Cysts

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ABSTRACT

Spinoglenoid notch cysts are a relatively uncommon cause of shoulder pain and weakness, are often associated with labral tears, and commonly result in compression of the suprascapular nerve. Open and arthroscopic treatments have been described.

In an attempt to limit potential suprascapular nerve injury during arthroscopic excision, we have used a technique of arthroscopic cyst aspiration followed by labral repair. Routine glenohumeral arthroscopy is performed in preparation for superior labral repair. A 17-gauge spinal needle is then inserted 1 cm lateral to the posterior portal directed just lateral to the labrum in the region of the cyst (usually posterior-superior quadrant of glenoid). The cyst material is aspirated (commonly 5-15 mL), and the labral tear is repaired without violating the glenohumeral capsule.

For all 4 patients described in this report, magnetic resonance imaging showed complete cyst resolution at a minimum of 6 months after surgery.

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Cyst aspiration followed by labral repair limits the potential for nerve injury while increasing the likelihood of complete cyst resolution during arthroscopic treatment of spinoglenoid notch cysts.

A ganglion cyst located in or adjacent to the spinoglenoid notch of the shoulder is a relatively unusual cause of shoulder pain and weakness. Superior labral tears are

electromyography/nerve conduction velocities (EMG/NCV) are all valuable. Initial treatment is typically nonoperative. Early surgical treatment should be considered if there are positive EMG/NCV findings of nerve dysfunction.

When conservative treatment is not effective or when there is nerve compression, surgical intervention should be considered. Open surgical cyst excision traditionally has been the surgical treatment of choice.²

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commonly associated with spinoglenoid notch cysts. Between 50% and 100% of operatively treated cysts have a concomitant superior labral tear.¹⁻³ Compression of the suprascapular nerve can also result from spinoglenoid notch cysts because of the limited mobility of the nerve and the close proximity of the rotator cuff muscles at the notch. Nerve compression has been reported in about one third of cysts leading to weakness of external rotation (infraspinatus) or forward elevation (supraspinatus) and external rotation (infraspinatus) depending on the level of nerve compression.¹

The only conclusive method of diagnosing a spinoglenoid notch cyst is with magnetic resonance imaging (MRI), though history, physical examination, and possibly

Limitations of open excision include required muscle detachment, larger surgical dissection, and inability to assess and treat intra-articular pathology, specifically labral tears, which can lead to cyst recurrence or symptom persistence.

In recent years, arthroscopic treatment of cysts in association with labral tears has been recommended.¹⁻⁴ The arthroscopic techniques that have been described include cyst excision or “marsupialization” combined with labral repair and cyst decompression through the labral defect with labral repair (without cyst excision).^{3,4}

Cyst excision with labral repair has been reported to have excellent results, though there is some concern about the potential for suprascapular nerve injury during “shaving” or excision of the cyst. In an attempt to limit



Figure 1. Superior view of the shoulder in beach-chair position. Standard posterior portal (P), high (H) and low (L) rotator cuff interval portals, and port of Wilmington (W) are marked in preparation for superior labral repair. Spinal needle aspiration entry site (A) is located about 1 cm lateral to the posterior portal.

potential nerve injury, cyst decompression “through the labral tear” has been combined with labral repair, though follow-up MRI showed only 80% complete cyst resolution with this technique.⁴

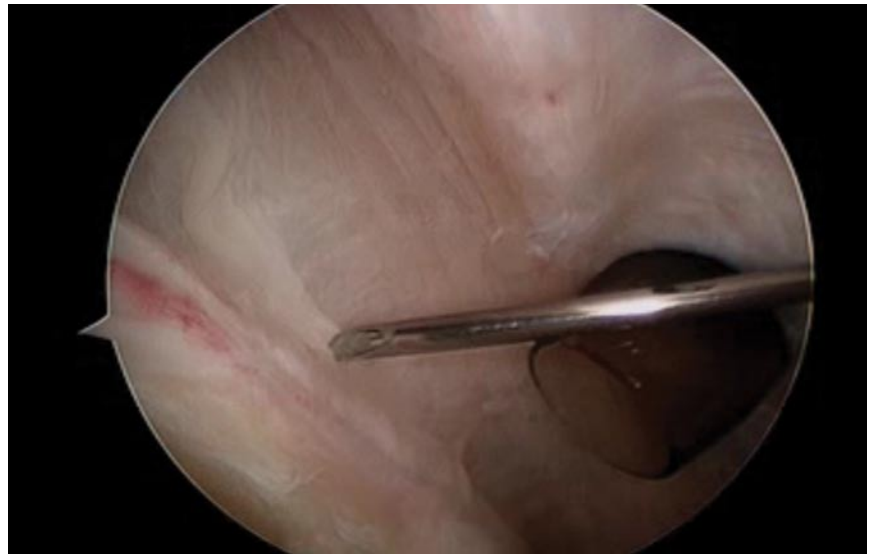


Figure 2. Intra-articular view of spinal needle piercing capsule just adjacent to the labrum in the region of a spinoglenoid notch cyst.

labral repair. Patients are placed in the beach-chair position. Standard portals for a superior labral repair are outlined, including high and low rotator cuff interval portals, a standard posterior portal (1 cm medial, 2 cm inferior to posterolateral corner of acromion), and a port of Wilmington (1 cm anterior, 1 cm lateral to posterolateral corner of acromion) for anchor placement. A site for spinal needle aspiration is also marked approximately 1 cm lateral to the posterior portal (Figure 1).

aspirated. At this point, the scope is switched back to the posterior portal, and an elevator instrument is used to probe the labral tear and release any final material from the cyst. At this point, a standard superior labral repair is performed. No attempt is made to incise the capsule adjacent to the labrum or to shave or excise the actual cyst or cyst contents.

During a 12-month period, we evaluated 4 patients who underwent this treatment for a spinoglenoid

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In an attempt to improve the likelihood of complete cyst resolution without increasing the risk for suprascapular nerve injury, we have performed a technique of arthroscopic cyst aspiration followed by labral repair for the treatment of spinoglenoid notch cysts.

TECHNIQUE

Because spinoglenoid notch cysts are most commonly associated with superior labral tears, our preferred arthroscopic setup is for a superior

Glenohumeral arthroscopy is started in the posterior portal. The scope is switched to the low anterior portal, and a clear cannula is placed in the posterior portal. Next, a 17-gauge spinal needle is inserted at the previously marked location on the shoulder and is inserted just adjacent and lateral to the labrum in the posterior superior quadrant of the glenoid (Figure 2). This region usually corresponds with the location of a typical spinoglenoid notch cyst. Approximately 5 to 15 mL of gelatinous material is commonly

notch cyst associated with a superior labral tear. All 4 patients had preoperative shoulder MRI studies that showed labral tears with associated cysts, and all had isolated weakness in external rotation with preserved strength in forward elevation. Two of the 4 patients underwent preoperative EMG/NCV, and both studies showed an axonal suprascapular neuropathy to the infraspinatus. MRI studies were repeated for all 4 patients at a minimum of 6 months after surgery. Complete (100%) cyst resolu-



Figure 3. Preoperative magnetic resonance imaging of a typical spinoglenoid notch cyst.

tion was noted with healing of labral repairs in each patient (Figures 3, 4). All patients returned to their normal work and sporting activities without limitation, and all had improved external rotation strength. There were no complications.

DISCUSSION

Treatment of spinoglenoid notch cysts did not receive much attention until very recently. The original description of surgical treatment of a cyst for isolated infraspinatus weakness was provided by Ganzhorn and colleagues in 1981.⁵ During the 1980s and 1990s, several authors described both open and arthroscopic methods of treatment, though these patient series were very small.^{6,7} Only recently have larger series involving both open and arthroscopic methods been reported.¹⁻⁴

Westerheide and colleagues³ reported outcomes for 14 patients with spinoglenoid notch cysts treated with arthroscopic cyst decompression and labral repair. Cyst decompression was performed through a window in the capsule adjacent to the labrum. Cyst lining was removed through

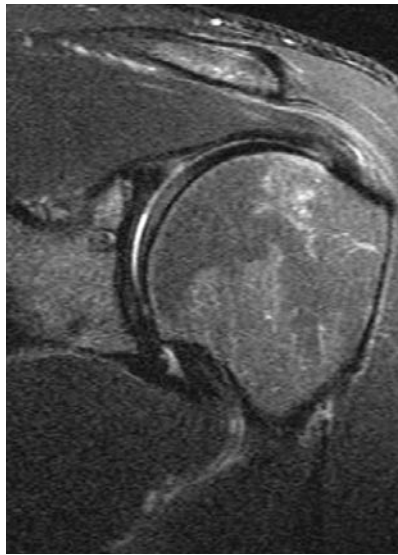


Figure 4. Magnetic resonance imaging 7 months after surgery shows complete cyst resolution and healing of a superior labral tear.

this capsular rent. All patients had labral tears (repaired at time of surgery), and all had preoperative external rotation weakness. By a mean of 51 months after surgery, all had experienced improvement in external rotation strength and significant improvement in the simple shoulder test. There were no complications.

The suprascapular nerve, which is near the glenoid rim, may be injured during cyst removal or excision. Mean distance from this nerve to the supraglenoid tubercle was reported to be 2.9 cm (SD, 0.7 cm), and mean distance to the posterior midglenoid level was 2.1 cm (SD, 0.5 cm).⁸ Given this proximity, alternative methods of surgical treatment of cysts have been described. Youm and colleagues⁴ described arthroscopic cyst decompression through a concomitant labral tear using instruments to probe the cyst to release the contents, followed by labral repair. This technique may limit the possibility of nerve injury. Ten patients were evaluated with clinical evaluation and MRI studies a minimum of 6 months after surgery. All patients had returned to work and were

satisfied with their results, though complete cyst resolution occurred in only 80% of patients.

This technique uses the same treatment method described by Youm and colleagues⁴ but adds arthroscopic aspiration before labral tear mobilization and repair. As entering the cyst and convincingly releasing it can be difficult, aspiration is a simple addition that provides confidence that the cyst contents have been removed. Our preliminary evidence suggests that this technique is a safe and simple addition to cyst decompression through the labral tear. This technique has minimal increased morbidity or risk for nerve injury but potentially improves rates of complete cyst resolution.

AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.

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