

# Arthroscopic Intra-articular Spinoglenoid Cyst Resection Following SLAP Repair



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**Abstract:** Spinoglenoid cyst (SGC) is a ganglion arising in the spinoglenoid notch and is thought to be related to SLAP lesion. This cyst often compresses the suprascapular nerve in the spinoglenoid notch. Symptomatic cysts require surgical treatment when conservative treatment fails. In particular, arthroscopic decompression through the torn labral tissue when the cyst is extending into the joint cavity is easy and convenient. However, if the cyst is confined to the spinoglenoid notch, arthroscopic approach through the torn labral tissue is challenging. Thus, we present our preferred technique of addressing the SGC through an additional superior capsular window after completing SLAP repair. We believe that our technique is easy, reproducible, and reasonable.

A spinoglenoid cyst (SGC) can result in compression of the suprascapular nerve (SSN) in the spinoglenoid notch or even in the suprascapular notch.<sup>1</sup> The association of these cysts with SLAP lesions is widely reported and is considered to be formed by a 1-way-valve mechanism, where the synovial fluid passes through the torn labrum and accumulates to form a cyst.<sup>1-3</sup> Spinoglenoid cyst with SSN compression causes vague shoulder pain and weakness of the infraspinatus muscle only, or when big results in weakness of the supraspinatus muscle also. Diagnosis is made on clinical findings, magnetic resonance imaging (MRI), and electromyographic evaluation. MRI scan will allow confirming the presence, size, and location of the cyst (Fig 1) and also detecting any associated intra-articular pathology, such as the SLAP lesion and atrophy in the muscles involved. Electromyographic evaluation is often helpful to identify the location and

extent of SSN involvement in patients with SGC.<sup>3,4</sup> Also, postoperative electromyography is useful for documenting the return of nerve function after resection of the cyst. SGC can be treated nonoperatively or by needle aspiration under ultrasound or computed tomography (CT) guidance or by surgical intervention.<sup>3,5</sup> Because of unresponsiveness and worsening of symptoms in nonoperative management and the risk of recurrence of the cyst after needle aspiration,<sup>2,5</sup> surgical treatment is now preferred by most surgeons. Operative treatment can be performed either by an open cyst excision or by arthroscopic decompression.<sup>4,6</sup> Because open surgery is an invasive procedure and it cannot address intra-articular pathology, arthroscopic surgery has emerged as a popular less invasive and successful modality.<sup>2,6,7</sup> Various modalities of arthroscopic treatment are described in the literature. It can be either a repair of the labrum without resection of the cyst<sup>8,9</sup> or intra-articular arthroscopic decompression of the cyst combined with labral repair<sup>2-4</sup> or decompression through the subacromial space. However, there is no clear-cut consensus on the best arthroscopic approach, especially intra-articular versus subacromial or decompression through a superior capsular window vs sublabral decompression. Most of the published literature reports good outcome with the intra-articular arthroscopic cyst decompression through the torn labrum followed by SLAP repair.<sup>1,6,7,10</sup> We believe that indirectly decompressing the cyst through the sublabral approach can lead to incomplete decompression of the cyst and has the accompanying risk of injuring the SSN. We present

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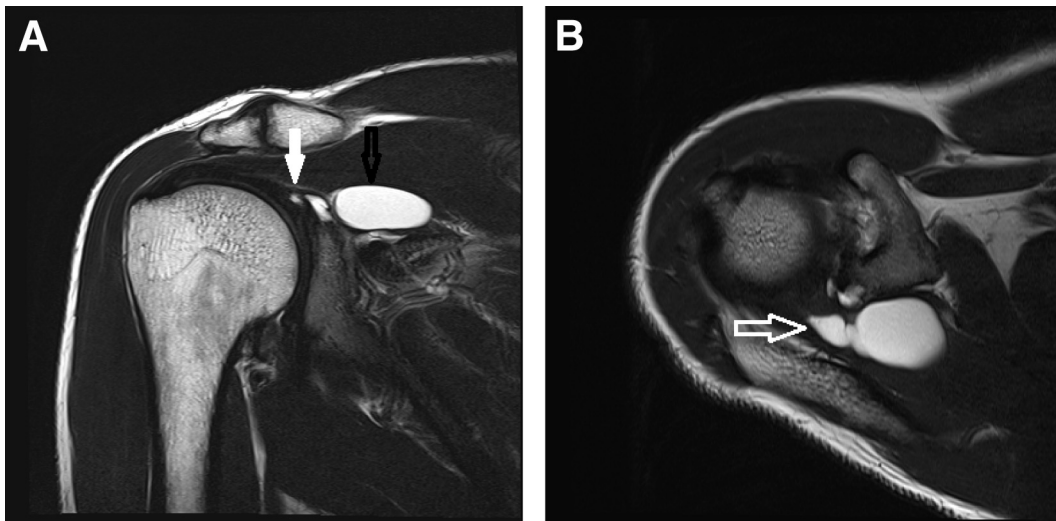
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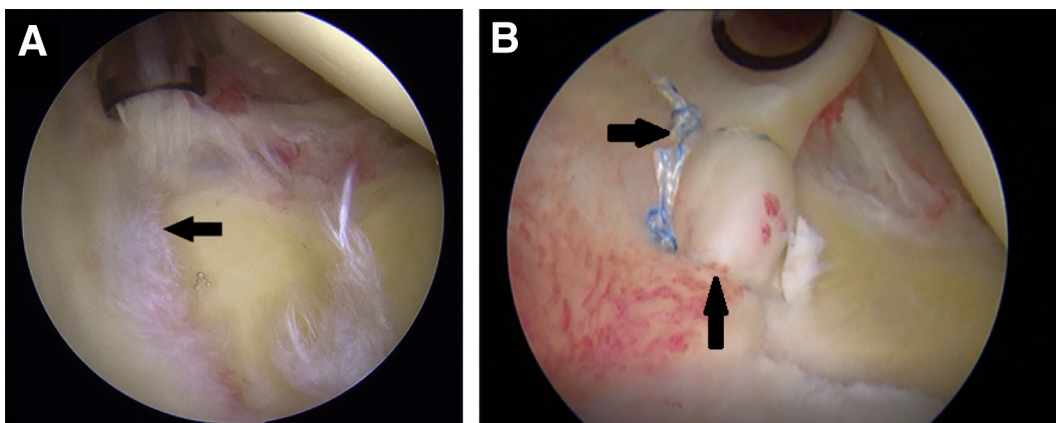
**Fig 1.** (A) MRI scan of the right shoulder in a case of SSN compression showing a large multiloculated spinoglenoid cyst (black arrow) and a SLAP lesion (white arrow) in coronal fat-suppressed T2-weighted image. (B) The arrow points to a large multiloculated paralabral cyst in the axial fat-suppressed T2-weighted image. (MRI, magnetic resonance imaging; SSN, suprascapular nerve.)

our preferred surgical technique of arthroscopic repair of the SLAP lesion first and then a direct and safe decompression of the cyst through a superior capsular window.

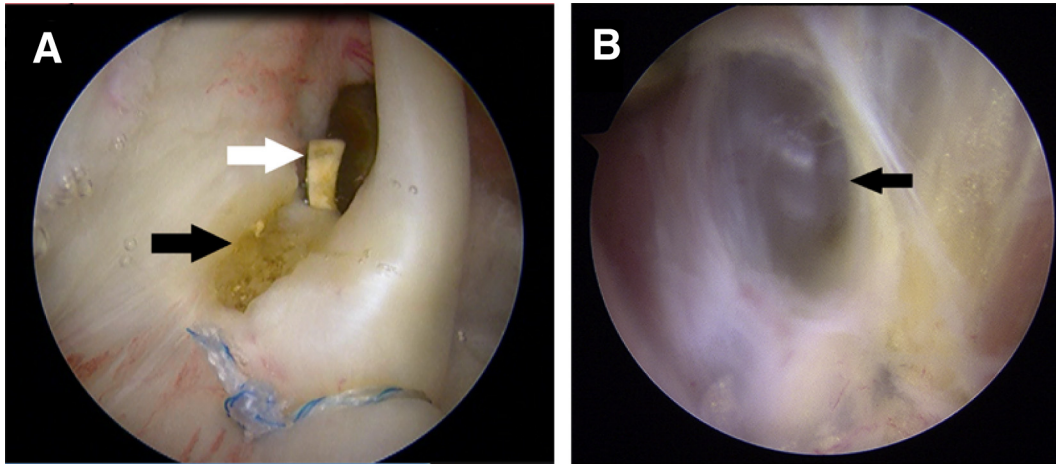
### Surgical Technique

The patient is positioned in lateral decubitus with the arm in 30° of abduction and 20° of flexion and traction (Device; Arthrex, Naples, FL) of 6 to 8 lb under general anaesthesia and interscalene block. Prior to application of traction, any abnormal humeral translation is ruled out through examination. After sterile preparation and draping, bony landmarks are outlined. We use 3 portals: the standard posterior portal, the anterior portal, and the trans-tendon portal through the transition between the supraspinatus and infraspinatus tendons. On

diagnostic arthroscopy through the posterior portal, a SLAP lesion—type II with focal synovitis of the posterior capsule is characterized (Fig 2A, Video 1). First, the SLAP lesion is addressed by viewing from the trans-tendon portal. Footprint debridement and decortication is done first, followed by repair with 3 Y-Knot RC All-Suture Anchor (ConMed Linvatek, Utica, NY) (Fig 2B; Video 1). Next, the viewing portal is moved back to the posterior portal and a 3.5-mm 90° angled radiofrequency ablation device (Dyonics; Smith & Nephew, Andover, MA) is inserted through the anterior portal into the joint. A superior capsulotomy is then performed to create a window using the ablator starting at the biceps origin and moving posteriorly based on the preoperative assessment of cyst location (Fig 3A, Video 1). To prevent damage to the repaired labrum,



**Fig 2.** (A) Arthroscopic image of right shoulder from the posterior viewing portal showing a SLAP tear (arrow) extending from the 10- to 1-o'clock position. (B) Arthroscopic image of the right shoulder joint viewing from the posterior portal showing repair of the SLAP tear (arrows).



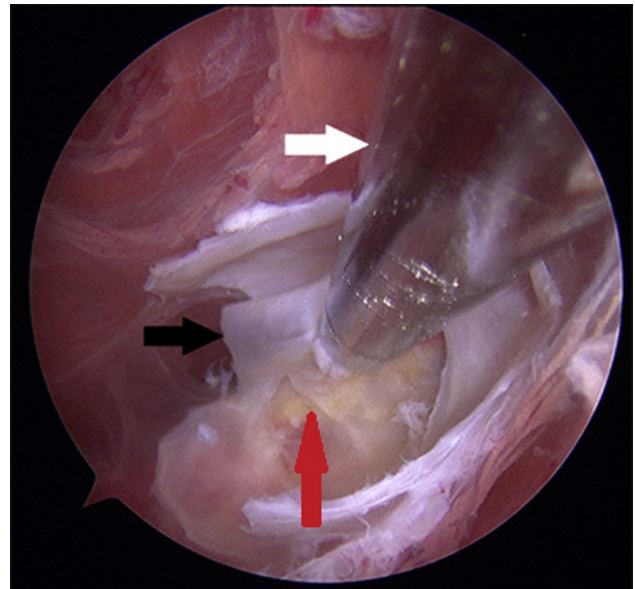
**Fig 3.** (A) Image from a right shoulder arthroscopy viewing from the posterior portal showing superior capsulotomy (black arrow) performed with a radiofrequency ablation device (white arrow) starting at the biceps origin. (B) Arthroscopic image of the right shoulder viewing from the posterior portal showing the bluish prominence of the spinoglenoid cyst (arrow) as seen after completion of the superior capsulotomy.

release is done 0.5 cm medial to the suture knot. On completion of the capsulotomy, a motorized shaver is introduced through the trans-tendon portal to debride the soft tissue underneath the supraspinatus muscle. During this step, the supraspinatus muscle is pulled upward by a Wissinger rod introduced from the anterior portal to secure the space around the cyst. After clearing the soft tissues, a bluish prominence of the SGC can be visualized (Fig 3B). On breaking the cyst wall with the shaver, typically an egress of yellowish fluid from the cyst cavity can be seen. The remaining part of the cyst wall is now debrided and removed completely with the motorized shaver. Here the SSN can be seen lying adjacent to the deep part of the cyst (Fig 4, Video 1). When using the shaver, great care must be taken to avoid SSN injury as it lies deep in the cyst, approximately 2 cm medial to the glenoid rim. The released capsule is left unrepaired. A thorough wash is given and the wounds are closed with no. 3.0 nonabsorbable sutures.

### Discussion

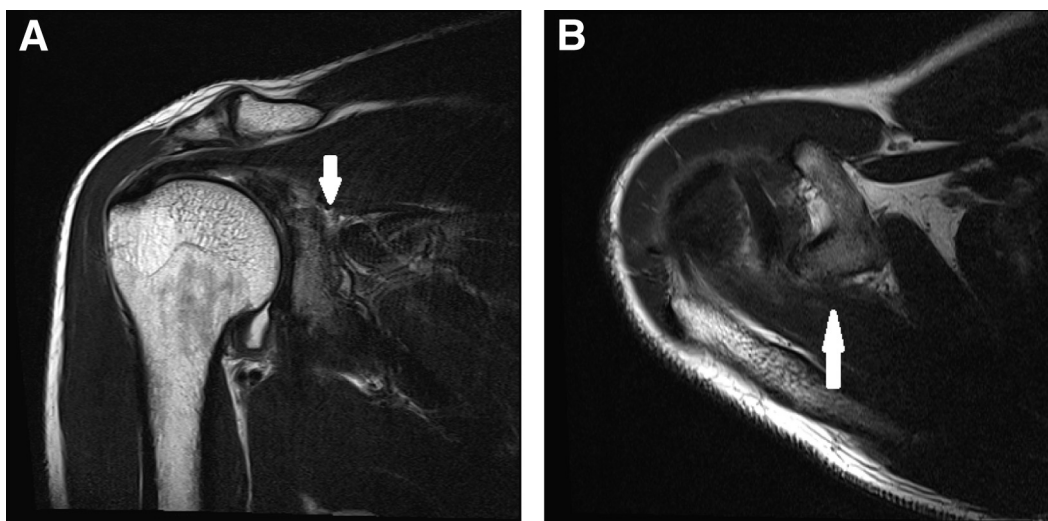
Most authors agree that arthroscopic intra-articular cyst decompression with labral repair is effective and has good clinical outcomes and have reported a high recurrence rate if the labral tear is not repaired, which indicates a strong association of the cyst with SLAP lesion.<sup>4,6,7,10,11</sup> Another reported approach to decompress the cyst is through the subacromial space when the cyst is extending superiorly.<sup>12</sup> However, this technique requires thorough bursectomy and has the possible risk of injury to the SSN or coracoclavicular ligament by aggressive soft tissue dissection and also has the possibility of failure to diagnose a concomitant labral tear.<sup>7</sup> Cyst decompression from the intra-articular space has the advantage of repairing the associated SLAP

lesion without the need of additional arthroscopic portals and unnecessary soft tissue dissection. Arthroscopic intra-articular decompression of SGC can be performed indirectly through the labral defect, or directly, in which the cyst is observed through a superior capsular window.<sup>4,12</sup> In the published literature, most reports are in favor of indirect cyst decompression through the labral defect first, followed by SLAP repair.<sup>1-3,6,7,10</sup> Iannotti and Ramsey<sup>6</sup> described arthroscopic management of



**Fig 4.** Arthroscopic image of the right shoulder from the posterior viewing portal showing the remnants of a spinoglenoid cyst wall (black arrow) seen through a superior capsular window being removed with a mechanical shaver (white arrow). The SSN can be seen lying close to the deep part of the cyst wall (red arrow). (SSN, suprascapular nerve.)





**Fig 5.** Postoperative MRI scan images: (A) coronal and (B) axial fat-suppressed T2-weighted images showing the disappearance of the cyst (white arrows). (MRI, magnetic resonance imaging.)

spinoglenoid cysts using a rosette knife introduced into the labral defect. Moore et al.<sup>1</sup> and Bhatia et al.<sup>10</sup> reported the arthroscopic decompression of cyst through a sublabral approach followed by labral repair. However, we believe that complete removal of a large cyst may not be possible through a sublabral approach, and the possibility of SSN injury cannot be excluded if one goes too medial. The SSN lies in close proximity (at a distance of approximately 2 cm) to the glenoid rim,<sup>3</sup> and introduction of sharp instruments and shavers into the cyst cavity may endanger the SSN. Alternatively, only a few reports propose the repair of SLAP lesion first followed by cyst decompression through a superior capsulotomy. Ghodadra et al.<sup>12</sup> proposed decompression of the spinoglenoid notch cyst after the repair of a SLAP lesion. Hashiguchi et al.<sup>4</sup> recommend arthroscopic decompression of a spinoglenoid cyst through the released capsule as a safe and reliable procedure for patients with SSN disorders. They reported 3 of 6 patients treated by sublabral approach as having persistent pain postoperatively and 2 patients with postoperative MRI showing residual cysts. Repair of the SLAP lesion first followed by direct cyst

decompression through a superior capsular window has various advantages (Table 1) and a few disadvantages as well (Table 1). We prefer a lateral decubitus position over beach chair because the glenoid is positioned parallel to the floor, which acts as a reference during surgery, and moreover this position allows us to reach the posterior and superior aspects of the glenohumeral joint easily. With the conventional technique of sublabral decompression of cyst first followed by SLAP repair, we feel that problems such as difficult visualization and incomplete evacuation of cyst, early fluid extravasation, and poor visual field for SLAP repair are inevitable, which lead us to think of this technique. We think our technique of addressing the spinoglenoid cyst through an additional superior capsular window after completing SLAP repair can avoid the mentioned problems and is less demanding, is reproducible, and has shown promising results.

All–intra-articular arthroscopic spinoglenoid cyst resection through superior capsular window after SLAP repair is a reasonable method that ensures complete evacuation of cysts and appears promising to us (Fig 5).

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**Table 1.** Advantages and Disadvantages of Our Technique

### Advantages

1. Direct visualization of the cyst.
2. Fewer chances of incomplete decompression and recurrence of the cyst.
3. No risk of converting a small, stable superior labral lesion into a large and unstable lesion.
4. Fewer chances of injuring the suprascapular nerve.
5. Useful when the superior labral lesion does not require repair.

### Disadvantages

1. Creation of a large defect in the superior capsule
2. Time-consuming procedure
3. Formation of a large tissue hematoma

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