



Arthroscopic Decompression of Spinoglenoid Notch Cyst and SLAP Repair Through a Single Working Portal

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Abstract: A SLAP lesion can be found with a concomitant spinoglenoid notch cyst. The cyst can cause suprascapular nerve compression, resulting in shoulder pain and weakness of external rotation. Their management varies from conservative treatment to operative treatment. Cyst decompression through the labral tear is our preferred treatment. Previous studies demonstrated a good result after arthroscopic decompression of the cyst through the labral tear combined with SLAP repair. Many surgeons usually use 3 portals to perform this procedure. However, we prefer to use only 2 portals, 1 anterior viewing portal and 1 posterior working portal. This strategy is more time and cost efficient. The patient is positioned in lateral decubitus. The SLAP lesion is demonstrated by using a probe. Tissue elevator is inserted into the labral lesion to penetrate into the cyst wall. A soft anchor is placed. A birdbeak suture passer penetrates the posterior labrum. Then knot tying is done. The advantages of this single working portal technique are short operative time, a decreased risk of iatrogenic rotator cuff injury from accessory anterolateral portal or posterior labral injury from posterolateral portal, and avoiding unnecessary superior capsule incision for cyst exposure.

A SLAP type II lesion can be found with a concomitant spinoglenoid notch cyst.^{1,2} The cyst is considered to be developed by a 1-way valve mechanism that allows synovial fluid to leak through the labral tear and accumulate outside the glenohumeral joint.³ This cyst has the potential to compress the suprascapular nerve at the suprascapular notch area, resulting in shoulder pain and weakness of external rotation.^{4,5} Physical examination may demonstrate isolated infraspinatus muscle atrophy (Fig 1).

Preoperative magnetic resonance imaging demonstrates cystic lesion at the spinoglenoid notch in various sizes and SLAP lesions (Fig 2).

Arthroscopic surgery is the treatment of choice after failure of conservative treatment.^{4,6} There are some various types of surgical techniques, namely, labral repair alone without cyst decompression, cyst decompression through labral tear with labral repair, and cyst excision through superior capsule window with labral repair.⁷⁻⁹

Cyst decompression through the labral tear is our preferred treatment. Previous studies have demonstrated a good result after arthroscopic decompression of a spinoglenoid notch cyst through labral tear combined with SLAP repair. Three portals were usually used for this procedure.¹⁰⁻¹³

The 3 portals composed of (1) a standard posterior portal, (2) a standard anterior portal, and (3) accessory anterolateral portal or posterolateral portal. However, we prefer to use only 2 portals instead of 3. We use 1 anterior viewing portal and 1 posterior working portal. The posterior working portal is used for both anchor insertion and suturing the torn labrum. This strategy is more time and cost efficient. In our practice, we do not put the anchor and fix the anterior part of biceps anchor because we believe that fixation of the biceps

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Fig 1. The spinoglenoid notch cyst can cause suprascapular nerve compression. Wasting of infraspinatus muscle is visible when looking at the right shoulder from behind (arrow).

anchor too rigidly may cause postoperative shoulder stiffness, leading to unsatisfactory results and a high prevalence of revision surgery.¹⁴⁻²¹

Surgical Technique

The patient is positioned in lateral decubitus. The shoulder is in abduction at 35° to 45° and forward flexion at 20°. The forearm is wrapped with a 3-inch-wide sterile skin traction and connected to the IV stand (Fig 3). The patient is under general anesthesia with an interscalene block.

The posterior viewing portal is created 2 cm inferior and 1 cm medial to the posterolateral corner of the acromion. After a complete glenohumeral joint examination is done, the anterior portal is created in the center of rotator interval using an outside-in technique. The 18-gauge spinal needle is inserted to find the correct spot, then the incision is created using No. 11 blade. The switching rod is inserted then followed by dilators and plastic cannula.

The camera is switched to the anterior portal. Another cannula is inserted in the posterior portal. Care should be taken not to injure the posterior labrum during canula insertion.

The SLAP lesion is demonstrated by using a probe (Fig 4 and Video 1). The exact length of labral detachment must be ascertained. A tissue elevator is inserted into the labral lesion to release significant tissue scarring and penetrate into the cyst wall (Fig 5). Carefully protect the suprascapular nerve by not inserting sharp instrument to exceed 1.5 cm medial to the glenoid rim. The external squeezing technique using the surgeon's fingers at the posterior shoulder reveals the gelatinous yellow fluid leaking from the spinoglenoid cyst (Table 1). After adequate drainage of the cyst, an arthroscopic rasp is used to create a raw surface at the glenoid rim. We do not use a motorized shaver because

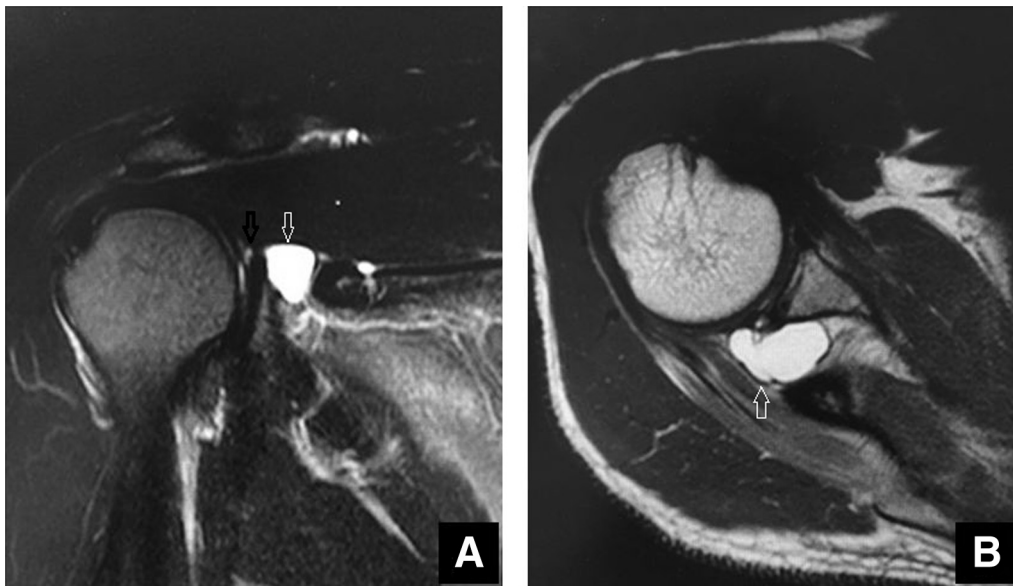


Fig 2. (A) Coronal magnetic resonance imaging (MRI) scan of the right shoulder demonstrates type II SLAP lesion (black arrow) and spinoglenoid notch cyst (white arrow). (B) Axial MRI scan demonstrates large lobulated cystic lesion at spinoglenoid notch causing suprascapular nerve compression (white arrow).

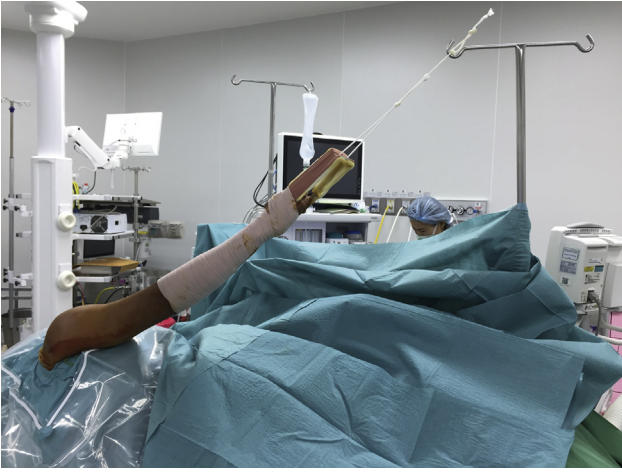


Fig 3. The patient is placed in the lateral decubitus position. The right shoulder is positioned in 40° of abduction and 20° of forward flexion.

it can accidentally damage the labral tissue or suprascapular nerve.

Next, we prepare to place a soft anchor adjacent to the detached labrum through the posterior portal. The JuggerKnot guide (Biomet, Warsaw, Poland) is inserted to the glenoid rim. Because of the curved design of the guide, the placements are easy even in a difficult location. Then the JuggerKnot drill is inserted into the drill guide and a pilot hole is created (Fig 6). The drill hole is created on the glenoid surface at angle of 70° to 80° to the glenoid and 1 mm from the glenoid rim. A soft anchor JuggerKnot (size 1.4) is placed using a small mallet. The anchor is then tested for the stability before we proceed to the next step.

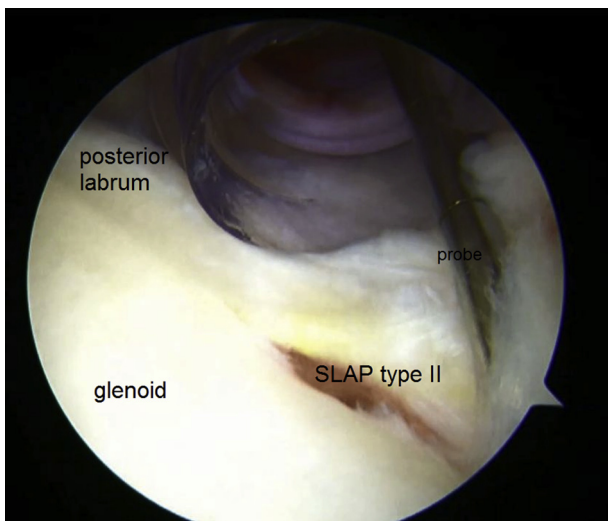


Fig 4. The type II SLAP lesion is demonstrated by using arthroscopic probe. The detachment of labrum is from 10 o'clock to 12:30 o'clock. The camera is in the anterior portal.

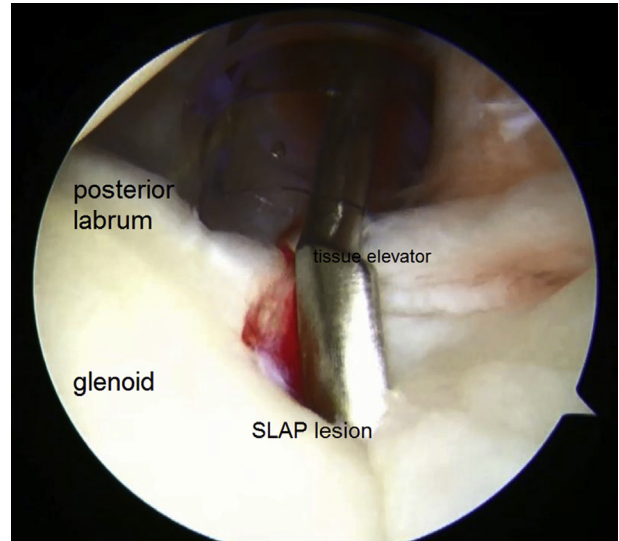


Fig 5. The tissue elevator is inserted into the lesion to release adhesion and penetrate the cyst wall. Manual squeezing at the posterior of shoulder by using surgeon's fingers will compress the cyst and force the yellow fluid to leak into the joint more easily.

The posterior labrum is penetrated, and the suture is retrieved by using an Arthrex 45° BirdBeak suture passer (Arthrex, Naples, Italy; Fig 7). The number of labral penetrations with the BirdBeak suture passer must be no more than 1 or 2; otherwise, large labral defect will be created. Knot tying is done using a Chula Knot,²² followed by 3 reversing half-hitches through the posterior portal. Excess suture limbs are cut arthroscopically. A knot should be placed peripherally, away from the articular cartilage. Two or 3 anchors are used depending on the size of the torn labrum (Fig 8).

Postoperative Rehabilitation

The patient requires the use of the sling for the first 4 weeks after the operation. Elbow, wrist, and fingers motions were allowed starting on the first day. Passive range of motion exercise of the glenohumeral joint was performed during the first 4 weeks. At week 4, assisted active range of motion exercise begins to regain normal motion. Progressive strengthening exercise is allowed at week 8.

Discussion

Magnetic resonance imaging is very helpful to diagnose the spinoglenoid notch cyst and concomitant SLAP lesion in patients who present with vague shoulder pain and weakness of external rotation. An electromyogram will identify any suprascapular nerve entrapment. The management described in the literature varies from conservative treatment to operative treatment.^{7,23}

Table 1. Pearls and Pitfalls in Arthroscopic Decompression of Spinoglenoid Notch Cyst and SLAP Repair

Pearls	Pitfalls
Lateral decubitus position with arm traction is better than beach chair position. This allows for wider working space in the glenohumeral joint.	Posterior portal should not be placed too close to the labrum otherwise iatrogenic labral injury can occur during the plastic cannula insertion.
Be prepared for biceps tenodesis in case of concomitant long head biceps tear especially in elderly patients.	Carefully protect suprascapular nerve by not inserting sharp instrument to exceed 1.5 cm. medial to glenoid rim.
Use arthroscopic tissue elevator to penetrate the cyst wall.	Do not open the window at superior capsule to access to the cyst directly. The last source of blood supply that will help promote healing of SLAP repair comes from this tissue.
To observe the gelatinous yellow fluid leaking from the cyst, the pressure of arthroscopic pump must be kept low during the cyst wall penetration process.	

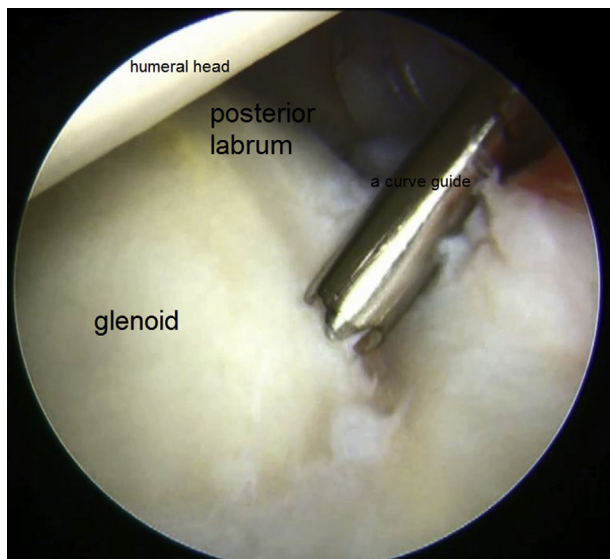


Fig 6. A curve guide is placed at the glenoid rim. During the process of drilling and anchor placement, the guide must be held firmly otherwise anchor pulled out will be encountered.

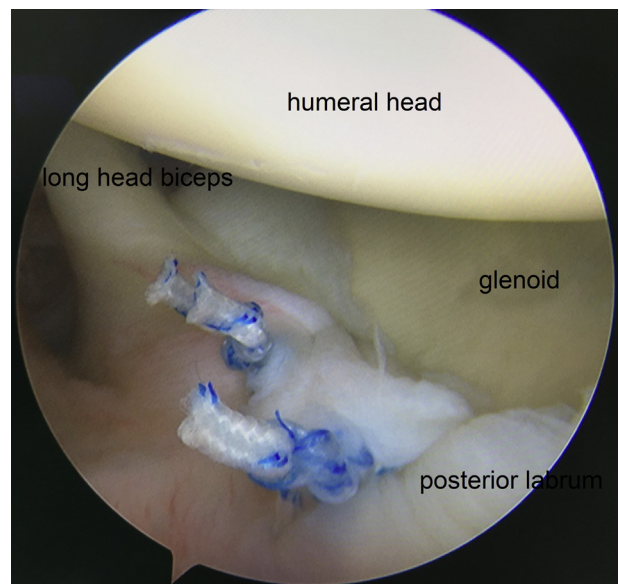


Fig 8. The SLAP is reattached in anatomical position using 2 single-loaded JuggerKnot soft anchors. The camera is in the posterior portal.

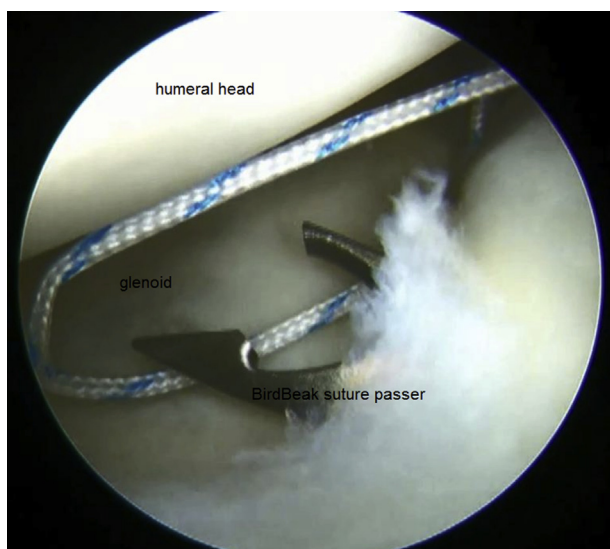


Fig 7. A BirdBeak suture passer penetrates the detached posterior labrum and grasps one limb of the suture. Care must be taken not to penetrate the labrum several times, or a large hole from the instrument will take place.

The advantages of a single working portal technique are the short operative time, a decreased risk of iatrogenic rotator cuff injury from an accessory anterolateral portal or posterior labral injury from a posterolateral portal and avoiding an unnecessary superior capsule incision for cyst exposure. The risk associated with this technique is an iatrogenic suprascapular nerve injury. It may occur if the sharp instrument is inserted through the torn labrum more than 1.5 cm. medial to the glenoid rim.

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