

Case Report

The superior labrum anterior-to-posterior (SLAP) lesion with complete tear of biceps tendon -a unique correlation

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Abstract

The Superior Labrum Anterior-to-Posterior lesion (SLAP) is a term refers to a tear involving the superior glenoid labrum. These lesions are most common among athletes who perform overhead arm movements. The condition typically is a result of a fall on an outstretched hand or the repetitive overhead activity of hand that causes traction on the shoulder. SLAP lesions present a specific type and pattern of injury that includes mainly the partial or complete detachment of the superior labrum and or the long head of biceps tendon. Patients present with SLAP lesions mostly complains about pain in the shoulder while performing overhead movements and often develop mechanical popping or catching sensation in the shoulder. Our case report reviews the typical clinico-radiological findings and management of the SLAP lesion.

Keywords: SLAP Lesion, Biceps tendon tear, Popeye sign, MRI

Introduction

SLAP lesions occur most commonly in persons or athletes who perform repetitive overhead motions, mostly in swimmers or gymnasts, and persons who show direct compression of the shoulder other than falls.^[1] SLAP lesion is difficult to diagnose clinically, as some of the patients present with intermittent and vague symptoms. Since many shoulder pathologies over-masked the signs of labral tear, so it is quite difficult to diagnose a SLAP lesion on physical examination. A true combination of radiological imaging and clinical examination findings are important to accurately diagnose and plan for management.

Case history

A 55-year-old right-handed male presented to the department with the history of an overhead lifting of a heavy weight followed by sudden onset right shoulder pain and popping sensation on flexion of the arm. He described the pain as sharp and localized deep within the shoulder. No history of any type of shoulder trauma, muscle weakness, paresthesias, and paralysis of his shoulder or arm. Upper limb examination shows both shoulders are symmetrical and absence of bony abnormalities with a full range of motion except the abnormal prominent bump (Popeye sign) on the arm which was shown on flexion against resistance (Fig 1).



Figure 1: Popeye sign, tearing of the biceps tendon and looks like a muscle mass (black arrow).

IMAGING FINDINGS

Plain radiograph anteroposterior (AP) views of the shoulder in the internal and external rotation, as well as an outlet and axillary views, were normal. Ultrasound shows the long head of biceps tendon tear with retracted fibers forming a mass in mid-arm. Further MRI was done to look for labral and rotator cuff injuries. MR images with T1W, T2W and STIR sequences in the coronal, sagittal and axial planes shows a linear T2/STIR hyperintense signal in the

superior labrum from anterior to posterior aspect suggestive of a complete tear (Fig 2a, b).

The long head of the biceps tendon shows a discontinuity at the proximal attachment site adjacent to superior labrum with the fluid signal in the bicipital groove suggestive of a tear (Fig 3a, b). Acromio-clavicular joint shows severe degenerative arthritic changes. Fluid collections noted at subscapularis attachment site suggesting partial rotator cuff tear. No evidence of any cortical, osteochondral or subcortical defects was noted.

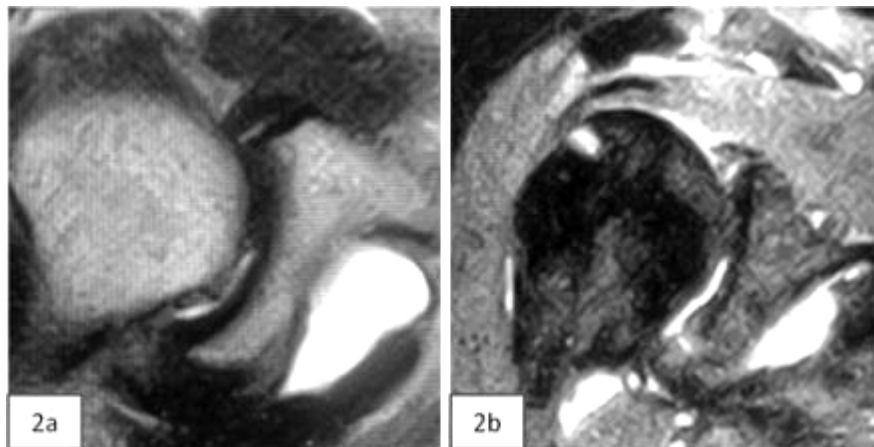


Figure 2(a, b): Linear T2/STIR hyper intense signal seen in the superior aspect of labrum extending from anterior to posterior aspect suggestive of SLAP lesion.

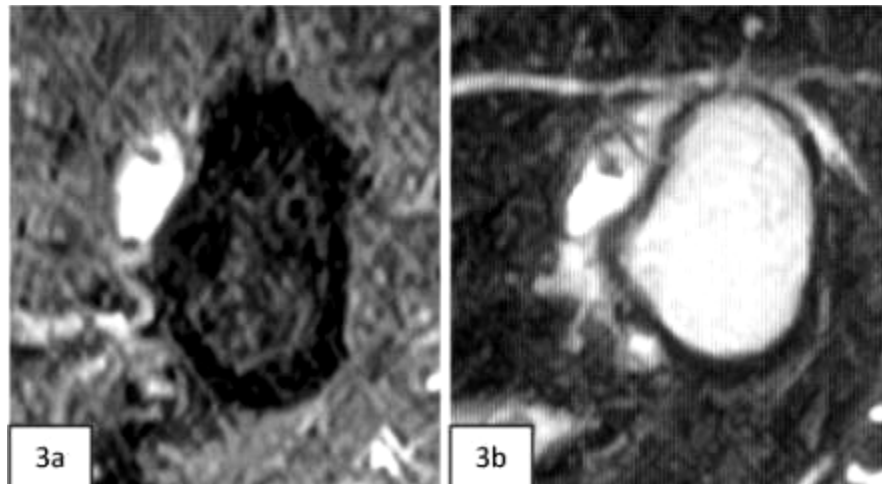


Figure 3(a, b) The bicipital tendon shows a discontinuity at the proximal site adjacent to superior labrum with the fluid signal in the bicipital groove possibly s/o tear.

Discussion

Slap lesion is a specific type of injury in the superior labrum that starts posteriorly, extending anteriorly to involve the attachment of the long head of biceps tendon.^[2] The most common cause is a fall on an outstretched hand in the abduction and forwards flexion, translating the humeral head causing damage to the superior labrum. Other mechanisms of injury are overhead throwing motions, as in gymnasts and swimmers, and traction injuries, which can occur with a directly fall on the shoulder or pulling superiorly on a heavy object.^[3, 4] Patients present with pain during overhead activities and sometimes with mechanical catching, popping or grinding sensations. Other diagnoses to consider include acromioclavicular joint pain, impingement syndrome, symptomatic shoulder instability or bicipital tendonitis.

SLAP lesions are described as:

Type I lesions show degeneration, or fraying, of the superior labrum, but the long head of biceps tendon remains attached at its insertion of the labrum. Type II lesions show detachment of the superior labrum

from its site of insertion on the supraglenoid tubercle. Type III lesions show a bucket handle tear of the superior labrum, but with the biceps tendon remains attached. Type IV lesions show detachment of the superior labrum with the tear up to the biceps tendon longitudinally. Type V lesion shows Bankart lesion dissecting upward to involve the biceps tendon. Type VI lesion shows unstable radial or flap tear with separation of biceps anchor. Type VII lesion shows superior labral tear extending into a middle glenohumeral ligament. Type VIII lesion shows type II + entire posterior labral tear; anterior inferior labrum not involved. Type IX lesion shows circumferential labral tear^[1, 5]. Diagnosis can be based on a proper clinical examination and the use of appropriate imaging modalities. Initially for evaluation of the shoulder with plain radiographs includes anteroposterior (AP) view of the shoulder with internal and external rotation as an outlet and axillary views. Most of all radiographs are usually normal but sometimes the superomedial humeral head shows osteochondral impaction injuries. Evaluation for the other potential pathologies such as

anterior acromial spur an os-acromiale or a degenerative AC joint injury can also be conducted.^[6] When a diagnosis is not clearly on conventional radiographs, Magnetic resonance imaging takes its place. SLAP lesions are usually very nicely depicted in multiplanar T1- and T2-weighted sequences of MR imaging. Use of MR arthrography with an intraarticular injection of gadolinium will improve accuracy for diagnostic, which shows a sensitivity of 89%, a specificity of 91% and an accuracy of 90% in the identity of labral lesions.^[7] Oblique coronal or sagittal sections of T1-weighted MR images are useful and helpful in identifying and classifying SLAP lesions.

Distinguish types of slap injuries on MRI:

SLAP injuries type I present with pooling and irregularity of contrast within the labrum, without confirming of complete extension of the lesion in the superior labrum. Type II slap lesions present with a complete detachment of the labrum from the superior glenoid rim. Type III slap lesions present with tear and inferior shift of the superior labrum as a bucket handle tear, with the preservation of the biceps tendon, insertion on the labrum. Type IV slap lesions present with contrast dissecting within the fiber of the long head of the biceps tendon.^[7] There should be proper knowledge of normal labral variants, because an anatomic variation and congenital cleft of the anterosuperior labrum, such as Buford complex or sub labral foramen, can mislead for the diagnosis and treatment. In summary, on MR arthrography, the irregular collection of contrast in the superior labrum extending into the substance is diagnostic of a slap lesion.

Treatment differs with the type of SLAP lesion. Treatment starts with conservative therapy for superior labral lesions in which the biceps tendon is

intact as in type I and III. Non-steroidal anti-inflammatory drugs (NSAID) and a corticosteroid may decrease symptoms, but the mechanical problems associated with a superior labral lesion are not cured. A shoulder rehabilitation program mostly centered on scapular stabilization exercises, rotator cuff exercises and to regain a full normal range of movement, can improve symptoms of rotator cuff disease and improve surgical outcomes. Shoulder arthroscopy is the prime pillar of diagnosis and treatment for most of the patients. An arthroscopy as complete diagnostic tool includes an examination of the rotator cuff for corresponding partial thickness or full thickness tears. Arthroscopically ,type III and type IV SLAP lesions are fairly obvious, sometimes it may be difficult to differentiate a type I from a type II lesion or accurately distinguish the various subtypes of the type II lesion. Surgical management involves repair of avulsed labral fragments, debridement of degenerative labral tissue and or repair of torn biceps tendon.

Follow after surgery, the patient is kept in a sling for 2 to 3 weeks. All the passive range of motion exercises and pendulum are started during the 2nd week. All external rotation in abduction is restricted for the first 3 weeks due to the peel-back mechanism.^[8] All the range of motion exercises, including internal rotation stretching and passive posterior capsule, are started through 3-6 weeks. At near about 6 weeks, continuous strengthening of the rotator cuff, scapula stabilizers, biceps, and the deltoid is started. At 3-4 months, athletes can initiate a sports specific interval-training program and a non-athletes person can resume full activities. At 5-6 months, athletes regain all full activities. During the rehabilitation, or after, a capsular contracture recurrence can occur which will place the shoulder

again at risk for a slap lesion recurrence, so stretching of the posteroinferior capsule is mandatory.

In our case, a complete tear of superior labrum and the long head of the biceps tendon noted at the proximal attachment site adjacent to superior labrum with the fluid signal in the bicipital groove. Acromioclavicular joint shows severe degenerative arthritic changes. Fluid collections noted at subscapularis attachment site suggesting partial rotator cuff tear. Arthroscopy confirmed the imaging findings and surgical repair was done.

References

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Conclusion

Superior Labral Anterior-to-posterior (SLAP) lesions are clinically most important cause of pain in a shoulder and disability. To diagnosis, the abnormal anatomy of the superior labrum compared to the normal anatomy, the performance of an adequate shoulder exam is required. Clinical presentation and the use of appropriate imaging modalities with the use of MRI of the shoulder can help identify SLAP lesions early and for appropriate treatment.