

SLAP and Biceps Pathology

SLAP and biceps-anchor problems often cause deep shoulder pain during overhead throwing and other overhead activity.

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What you're feeling

You may feel a deep ache in the front of your shoulder. This pain often sits right where the long head of the biceps tendon attaches to the top of your shoulder socket. Because SLAP lesions can mimic other issues, you might also feel a sense of instability or catching in the joint. The pain can sometimes radiate down your arm.

Certain movements tend to make the discomfort worse. You might notice sharp pain when you lift your arm above your head, such as reaching for a high shelf or placing a bag in the boot of your car. Overhead activities like throwing a ball or swimming put extra stress on the injured area. You may also feel pain when you rotate your arm outward, like when you are putting on a jacket or reaching into a back pocket.

The pain often flares up after you have been active. You might feel stiff and sore the morning after a day of heavy lifting or sports. Nighttime pain is common, especially if you roll onto the affected side. This can disrupt your sleep and leave you feeling tired. Simple daily tasks can become difficult. You might struggle to lift a heavy grocery bag or pour water from a tall jug.

It is important to know that clinical tests alone cannot confirm this diagnosis. Your surgeon will look at your full history and symptoms. If you have pain in the front of the shoulder, your surgeon may check for other issues like calcific tendinitis, which involves calcium deposits in the tendon. Sometimes, a SLAP lesion occurs alongside other problems, such as a pulley lesion, though this combination is relatively rare.

Your surgeon will discuss the best path forward with you. For some patients, particularly younger active individuals, biceps tenodesis may be a reliable option. This procedure involves reattaching the biceps tendon to the upper arm bone. It can provide improved functional results and may allow for an earlier return to activity compared to repairing the labrum directly. We will tailor the treatment plan to your specific needs and activity levels.

What's actually happening

Your shoulder joint relies on a ring of cartilage called the labrum to keep the ball of your upper arm bone seated securely in the socket. Think of this labrum as a shock absorber or a gasket that seals the joint. The long head of your biceps tendon attaches directly to the top of this ring. When you have a SLAP lesion, that attachment point is damaged or torn. This disrupts the stability of your shoulder and puts extra strain on the biceps tendon.

This injury often causes pain and a feeling of instability. You might notice that your shoulder muscles do not fire in the usual order. Your body may try to compensate by activating other muscles, like the serratus anterior, earlier than normal. This is your body's way of trying to protect the joint from further movement or injury. Because of these changes, your shoulder may feel weak or unsteady, especially when you lift your arm or rotate it.

The symptoms can be tricky to pinpoint. A SLAP lesion can mimic other shoulder problems, such as impingement or general wear-and-tear arthritis. This is because the pain signals travel through similar pathways. In some cases, the tear is subtle and does not significantly change how the joint moves during passive motion. However, it still creates increased tension on the biceps tendon and alters how the joint loads weight. This ongoing strain can lead to further irritation or damage if left untreated.

Understanding what is happening helps explain why simple rest may not be enough. The mechanical issue at the anchor point needs to be addressed to restore normal function. Your surgeon will assess the specific nature of the tear and your activity level to determine the best path forward. Whether that involves repairing the labrum or reattaching the biceps tendon elsewhere, the goal is to relieve the tension and restore stability to your shoulder joint.

What we can do about it

The approach Dr Kieran Hirpara, an upper-limb surgeon at Mater Private Hospital Rockhampton, takes in our clinic focuses on a clear path from simple care to advanced options. Patients are generally referred to our clinic by their GP; if a physiotherapist has suggested you see us, you will still need a referral from your GP in order to be eligible for the Medicare rebate. A clinic assessment (history, examination, and imaging where needed) establishes the diagnosis. For degenerative or long-standing problems we usually try non-operative care – activity change, physiotherapy or hand therapy, splinting, and injections – and consider surgery when that has not given enough improvement. For structural or acute problems, surgery may be recommended straight away, without a preceding non-operative trial.

We start with self-management and physiotherapy. You can try changing activities to avoid painful overhead movements. Physiotherapy aims to strengthen the muscles around your shoulder to support the joint. This helps reduce strain on the torn labrum and biceps tendon. We recommend giving this approach a fair chance before moving to other treatments. Treatment decisions for SLAP lesions are driven primarily by the presence of pain, your overhead activity level, and prior non-operative management. A clinical prediction model consisting of variables describing patient characteristics, specific symptoms, and the type of non-operative

treatment modalities utilized was found to predict failure of non-operative management of SLAP tears with moderate accuracy. This means some patients may need more than just exercise to find relief.

If pain persists, we discuss medical management. This may include pain medication and anti-inflammatories to help you manage discomfort. Injections can also be considered. Cortisone injections reduce inflammation and can provide relief for a limited time. Hyaluronic acid injections may help lubricate the joint. Platelet-rich plasma (PRP) injections use your own blood components to promote healing. The effect of these injections varies, but they are often used to buy time for physiotherapy to work or to avoid surgery. Non-operative treatment with an appropriate regimen provided satisfactory clinical outcomes in middle-aged patients with symptomatic SLAP lesions and should be considered before recommending operative treatment.

Surgery is considered when conservative care has reached its limit. This means you have tried rest, therapy, and injections without getting enough improvement. A decision to operate on a shoulder for a suspected SLAP lesion should not be made on the basis of clinical assessment tests alone. We look at your overall picture, including your age and activity goals. If surgery is needed, we discuss the best option for you. For active patients under 30, primary biceps tenodesis provides improved functional results in active patients under 30 when compared to SLAP repair at minimum 2 year follow-up. For others, arthroscopic repair or biceps tenodesis may be suitable. Biceps tenodesis is a safe, effective, and technically straightforward alternative to primary SLAP repair in patients with type II and IV SLAP tears. We make the decision individually with you, weighing the specific advantages and disadvantages of each path.

What to expect

Your outlook depends on the specific type of tear and your age. For active patients under 30, biceps tenodesis (relocating the biceps tendon) often provides better long-term function than SLAP repair (reattaching the torn cartilage). In competitive overhead athletes, 81% return to their previous level of play at an average of 4.1 months postoperatively after subpectoral biceps tenodesis for symptomatic SLAP tear.

If you are middle-aged or over 40, biceps tenodesis is a reliable option. It provides satisfactory outcomes for the treatment of Type II and Type IV SLAP lesions in middle-aged patients. The procedure significantly decreases pain and increases shoulder function. Over the past 10 years, the total number of biceps tenodeses has increased, whereas the number and relative percentage of SLAP repairs within the practice have decreased.

Female patients who underwent surgical treatment of SLAP lesions with SLAP repair or biceps tenodesis show comparable minimum two-year results with respect to level of function, self-reported pain, and ability to return to sports after these procedures. Biceps tenodesis is a predictable, safe, and effective treatment for failed arthroscopic SLAP tears at a minimum 2-year follow-up.

If left alone, symptoms may persist. Risk factors for revision surgery after SLAP repair include age greater than 40 years, female sex, obesity, smoking, and diagnosis of biceps tendinitis or long head of the biceps tearing. Your surgeon will discuss which path fits your lifestyle and goals.

When to see someone

Ask for a specialist review if you have persistent shoulder pain that does not improve with rest. Seek care if you notice weakness, instability, or a feeling of locking or giving way. Symptoms that interfere with sleep or work also warrant evaluation. Sudden worsening of pain is another clear sign. Note that SLAP lesions may mimic other issues like impingement or rotator cuff problems. Therefore, clinical assessment tests alone are not enough to confirm a diagnosis. Your surgeon will look at the full picture to decide if surgery, such as biceps tenodesis, is right for you.

In more depth

This section goes further than you need for your own treatment decisions. SLAP tears are worth the extra reading because they are the shoulder diagnosis where both the clinical tests and the scan are least reliable – and because the operation that has become preferred is not the one that repairs the tear.

THE EXAMINATION TEST DOES NOT CARRY THE DIAGNOSIS

The Active Compression (O'Brien) test is the manoeuvre most associated with SLAP lesions. Assessed across **3,091** patients, it has **both limited screening and limited confirmation ability**, and the authors state plainly that they **do not advocate for its use in clinical decision making** [1].

That is about as negative a conclusion as a diagnostic review issues, and it applies to the test most often quoted as positive in referral letters.

AND MRI CANNOT RULE ONE OUT

Imaging is better but incomplete. Across **2,916** patients, MRI showed **moderate sensitivity with excellent specificity and accuracy** – making it valuable for **confirming** a SLAP lesion, while it **cannot definitively rule one out**, with arthroscopy remaining the reference standard [2].

Put the two findings together and the practical position is: a positive MRI is informative, a negative one is not conclusive, and the examination adds little either way. This is the main reason SLAP tears are over-diagnosed in shoulders whose pain has another cause – and why treating an incidental superior labral finding is a recognised error, particularly in older shoulders where fraying at that site is an expected age change.

TENODESIS HAS OVERTAKEN REPAIR, ON GROUNDS WORTH UNDERSTANDING

Where an isolated type II tear is genuinely symptomatic, two operations compete: repairing the labrum back to the socket, or detaching the biceps tendon and reattaching it lower down, removing the pull that stresses the torn labrum.

Across **881** patients, **SLAP repair and biceps tenodesis are both acceptable** as index treatment, with repair still the most commonly performed but tenodesis **equally efficacious and an attractive alternative** [3]. A decision analysis across **908** patients went further: **tenodesis is preferred over repair on greater expected value**, with meta-analysis showing more frequent favourable outcomes [4].

The mechanical logic is that repair restores the anatomy but leaves the biceps pulling on a healing repair, which in an older or stiffer shoulder frequently produces persistent pain and loss of external rotation. Tenodesis abandons the anatomy and removes the deforming force. Outcomes have favoured removing the force.

The exception is the young overhead athlete, where sacrificing the biceps anchor is a bigger functional decision and repair retains a role.

WHY THE BICEPS AND THE LABRUM ARE ONE TOPIC

The long head of biceps attaches directly to the superior labrum – they are continuous. A tear at that junction is therefore simultaneously a labral injury and a biceps anchor injury, which is why an operation on the biceps treats a labral lesion, and why symptoms overlap so completely with biceps tendinopathy that the two are often indistinguishable clinically.

REFERENCES

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