PATIENT GUIDE TO LABRUM TEARS IN THE SHOULDER

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What is the labrum?

The labrum is a type of cartilage found in the shoulder joint. The shoulder is a ball and socket joint where the arm meets the body (Figure 1). The arm bone (humerus) forms a ball at the shoulder which meets the socket which is part of the shoulder blade. These two bones are connected by ligaments which are tough tissues forming tethers that hold the bones in relationship to each other.

There are two kinds of cartilage in the joint. The first type is the white cartilage on the ends of the bones (called articular cartilage) which allows the bones to glide and move on each other. When this type of cartilage starts to wear out (a process called arthritis), the joint becomes painful and stiff. The labrum is a second kind of cartilage in the shoulder which is distinctly different from the articular cartilage. This cartilage is more fibrous or rigid than the cartilage on the ends of the ball and socket. Also, this cartilage is also found only around the socket where it is attached.

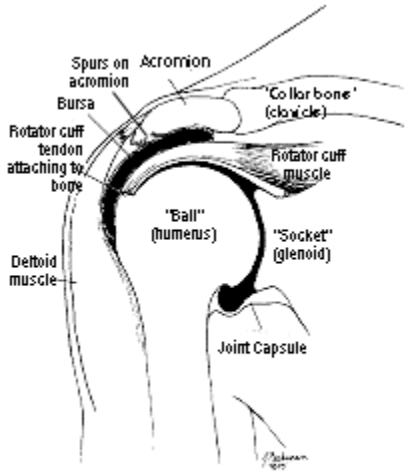

Figure 1

What is the function of the labrum?

The labrum has basically two functions. The first is too deepen the socket so that the ball stays in place. The best analogy is to picture the shoulder joint as a beach ball on a dinner plate. The ball of the humerus (the beach ball) is much larger than the flat socket (the dinner plate).

One thing that keeps the ball in the socket are the ligaments; these are the tethers that go from bone to bone which hold the bones together. The other way the ball is kept in the socket is the labrum (Figure 2).

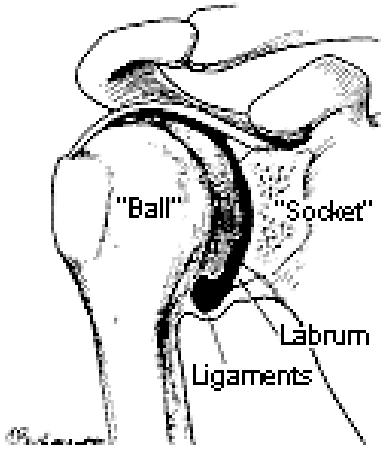

Figure 2

The labrum is a thick tissue or type of cartilage that is attached to the rim of the socket and essentially forms a bumper which deepens the socket and helps keep the ball in place. In individuals where the labrum is too small or is torn due to an injury, the ball may slide part of the way out of the socket (called a subluxation) or all the way out of the socket (called a dislocation). The labrum goes all the way around the socket and in most areas is firmly attached to the bone of the socket. In some areas it is not firmly attached and only recently have specialists determined which parts are normal and which parts reflect tearing of the labrum.

The second function of the labrum is as an attachment of other structures or tissues around the joint. For example, the ligaments that help hold the joint together attach to the labrum in certain key locations. If there is an injury to the shoulder that tears the ligaments, sometimes the labrum is pulled off of the rim of the bone as well (Figure III).

Figure 3

This injury usually involves a subluxation or dislocation of the shoulder and is usually due to trauma. The ball of the shoulder can dislocate toward the front of the shoulder (an anterior dislocation) or it can go out the back of the shoulder (called a posterior dislocation). In either case the labrum can be torn off of the bone. Usually when this happens the labrum does not heal back in the right location. Whether the joint continues to be unstable depends upon many factors.

The other structure that attaches to the labrum is the tendon of the biceps muscle (Figure 4a). The biceps muscle is the muscle on the front of the arm which gets firm with bending the elbow. While this muscle is quite large, it turns into a small tendon about the size of a pencil which attaches inside the shoulder joint. At the other end of the muscle is a large tendon which attaches beyond the elbow in the forearm. The portion which attaches in the shoulder actually goes through a small hole in the rotator cuff tendons designed specifically for that tendon. Once inside the joint the tendon attached in part to the bone near the socket and in part to the labrum at the top of the joint. This tendon can get torn where it attaches to the bone, where it attaches to the labrum or at both locations (Figure 4b).

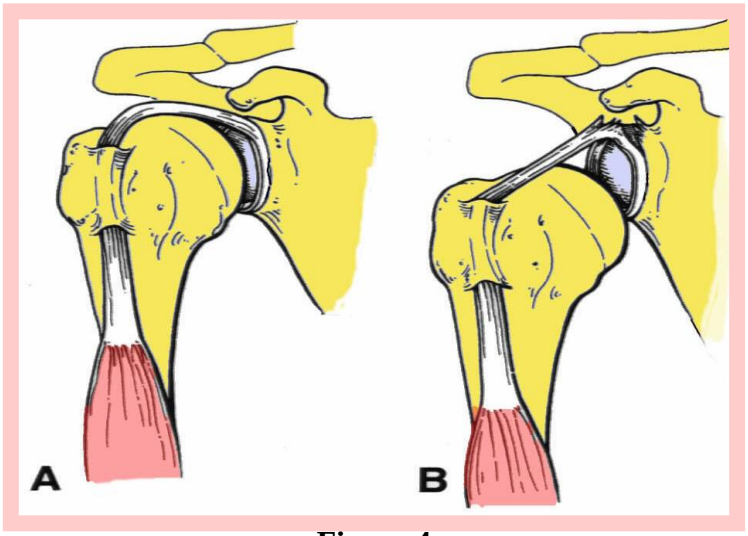

Figure 4

What is a labrum tear?

A labrum tear can take several forms, and it is very easy to confuse these types. As a result, it is important that you discuss with your physician exactly what type of tear he/she is talking about. The first type of tear is one where the labrum is torn completely off of the bone (Figure 3). This is usually associated with an injury to the shoulder where the shoulder has subluxated or dislocated. Sometimes this type of tear occurs and the individual does not appreciate that the shoulder has slid out of the socket.

The second type of labrum tear is tearing within the substance of the labrum itself. The edge of the labrum over time may get frayed so that the edge is not smooth. This type of tearing is quite common and rarely causes symptoms. It is seen frequently in the shoulder as people get more mature (over forty years of age). Sometimes the labrum may have a large tear where a portion of the labrum gets into the joint and causes clicking and catching as the ball moves around in the socket. This type of tear is very rare, and most labrum tears do not cause these symptoms.

A third type of labrum tear is in the area where the biceps tendon attaches to the upper end of the socket. The socket can be divided into four regions: anterior (or front), posterior (or back), the upper end near your head (or superior), and the lower end (or inferior) which is toward the elbow (Figure 5).

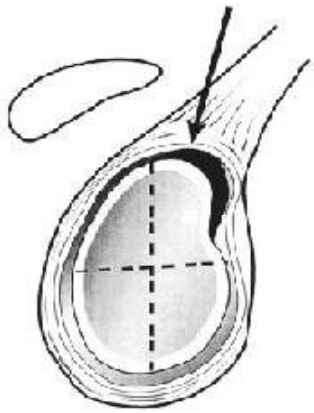

Figure 5

The biceps tendon attaches at the superior end where it blends in with the labrum. The labrum runs from there around the joint, both in an anterior and in a posterior direction. Due to injury in this area where the biceps tendon attaches, the labrum also can get injured. The injury in this area can be mild or it can be severe. Because the injury typically involves the biceps tendon and the labrum, because it is at the superior end of the socket and because it can effect the labrum attachments anterior and posterior to where the biceps attaches in this region, the acronym or abbreviation for this injury is a **SLAP** lesion. This stands for an injury which is **S**uperior **L**abrum **A**nterior and **P**osterior. There have been several grading systems or classification systems of this injury. In a lesser injury the labrum is only partially detached in this area. In a more severe injury the whole labrum is pulled off of the bone along with the biceps tendon. The most common classification divides SLAP lesions into four types (Figure 6).

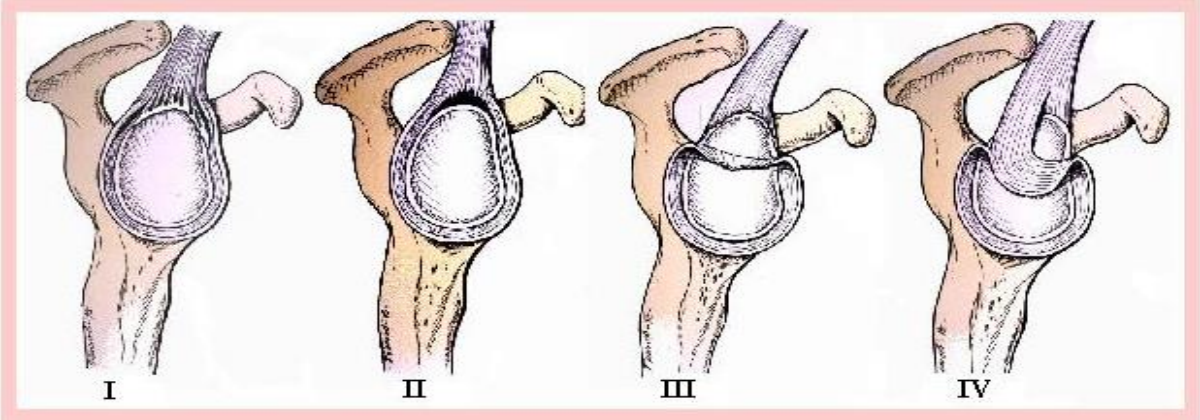

Figure 6

How is a diagnosis of a labrum tear made?

Because this cartilage is deep in the shoulder, it is very difficult to make the diagnosis of a torn labrum upon physical examination. There are several tests that the physician can perform which may indicate a torn labrum, but these tests are not always accurate. The other problem is that labrum tears take different forms as described above, and certain tests will detect one kind of tear but not another. Some physicians feel very confident that they can make the diagnosis of a labral tear upon physical examination, but this is controversial. There are not many scientific studies that show that physical examination is reliable for making the diagnosis of a labral tear. As a result of this uncertainty, other studies can be done to confirm the diagnosis if it is suspected.

The best tests available to make the diagnosis of a labral tear are magnetic resonance imaging or a test called a CT-arthrogram (the latter is a CAT scan preceded by an arthrogram where dye is injected into the shoulder). Both of these tests are relatively good at defining a labrum tear due to a subluxation or dislocation, but they are only around 80-85% accurate. For that reason, some physicians believe that are not always needed if the diagnosis of subluxation or dislocation can be made by history and physical examination. Neither of those tests is currently very good at making the diagnosis of a SLAP lesion. This area is very complex and it is difficult to reliably get good pictures of this area with MRI. However, if the MRI definitely shows a tear then frequently it will be present. The problem is that the MRI may miss smaller tears and cannot reliably make the diagnosis in larger tears of the labrum.

The best way to make the diagnosis of labrum tearing is with arthroscopy of the shoulder. Unfortunately this is an operative procedure and requires some form of anesthesia. Making the diagnosis also takes some experience on the part of the surgeon, since the anatomy of the inside of the shoulder can be quite complex. The relationship between labrum tears and symptoms has not been totally figured out, so it is not clearly known which ones should be repaired and which ones can be left alone.

What is the treatment for labrum tears?

The treatment depends upon which kind of tear there is in the labrum. Tears that are due to instability of the shoulder, either subluxation or dislocations, require that the labrum be reattached to the rim of the socket. This can be done with an incision on the front of the

shoulder, or it can be done with arthroscopic techniques through smaller incisions. There are advantages and disadvantages of each approach. At this institution we favor an open operation with an incision until arthroscopic techniques become more perfected.

If the labrum is frayed, usually no treatment is necessary since it doesn't usually cause symptoms. However, if there is a large tear of the labrum, the torn part should either be cut out and trimmed, or it should be repaired. Which treatment is used depends upon where the tear is located and how big it is. This type of tear requiring repair without instability of the shoulder is rare.

Tears of the labrum near the biceps tendon attachment (SLAP lesions) may be just trimmed or may need to be reattached to the top of the socket. The best way to do this is with arthroscopic surgery since this area is difficult to reach with an open operation through a large incision. Using the arthroscope and small incisions for other instruments, the labrum can be re-attached to the rim of the socket using either sutures or tacks.

What is the recovery from labrum surgery?

The recovery depends upon many factors, such as where the tear was located, how severe it was and how good the surgical repair was. It is believed that it takes at least four to six weeks for the labrum to re-attach itself to the rim of the bone, and probably another four to six weeks to get strong. Once the labrum has healed to the rim of the bone, it should see stress very gradually so that it can gather strength. It is important not to re-injure it while it is healing. How much motion and strengthening of the arm is allowed after surgery also depends upon many factors, and it is up to the surgeon to let you know your limitations and how fast to progress. Because of the variability in the injury and the type of repair done, it is difficult to predict how soon someone can to return to activities and to sports after the repair. The type of sport also is important, since contact sports have a greater chance of injuring the labrum repair. However, a vast majority of patients have full function of the shoulder after labrum repair, and most patients can return to their previous level of sports with no or few restrictions.