

ROTATOR CUFF DISEASE

Background

The shoulder is a modified ball and socket joint. The ball is the upper portion of the arm bone (humerus). The socket (glenoid) is the outer portion of the shoulder blade (scapula), which rests on the back of the chest wall. There are numerous muscles which are important for shoulder function that stabilize and control the position of the shoulder blade on the chest wall. As well, there are four muscles that arise from the shoulder blade and join together to insert on the periphery of the ball. These muscles and their tendons (the tissue that connects the muscle to bone) are called the rotator cuff. A rotator cuff that attaches to the bone is important for normal shoulder function. The rotator cuff provides strength and stability to the ball and socket, which allows the large chest (pectoralis) and upper arm (deltoid) muscles to provide power to the shoulder through a full range of movement.

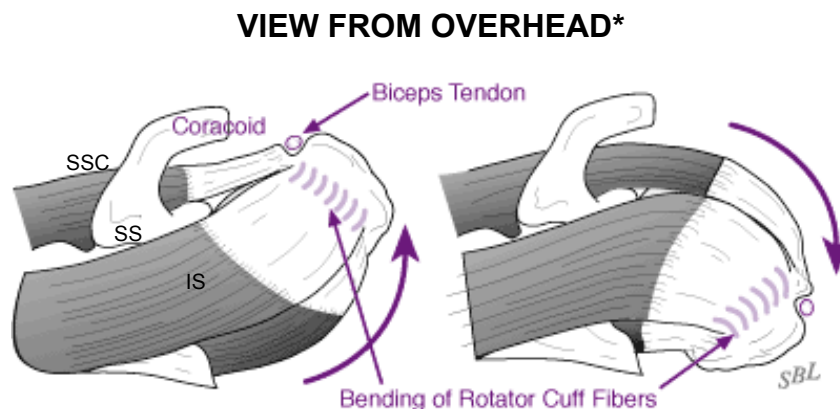
The four muscles of the rotator cuff are:

Subscapularis: muscle and tendon in the front portion of the shoulder

Supraspinatus: muscle and tendon on the top portion of the shoulder

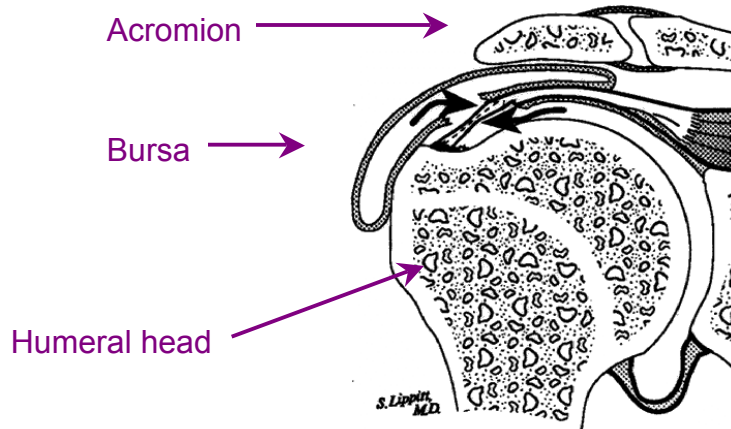
Infraspinatus and *teres minor*: muscles and tendons in the back portion of the shoulder

The tendons of the rotator cuff glide beneath the tip of the shoulder blade (called the acromion). A large, fluid-filled sac called a bursa is located between the tendons and the bone and helps lubricate the rotator cuff when the arm is elevated and rotated. Inflammation of the bursa is often an important part of rotator cuff disease.



Subscapularis = SSC
Supraspinatus = SS
Infraspinatus = IS

CROSS SECTIONAL VIEW FROM FRONT*



Rotator cuff tears

Problems of the rotator cuff are a common cause of shoulder pain and weakness in the general population. For most shoulder specialists, surgery to repair or treat disease of the rotator cuff is a commonly performed procedure.

The risk of developing a tear of the rotator cuff increases with age. Tears develop for a variety of reasons. They may be the result of a sudden injury, such as a dislocation of the shoulder or other high energy trauma, or they may develop gradually over time. Tears of the rotator cuff may or may not result in weakness or limitation of function. The most common presenting symptom of a torn rotator cuff is pain. The pain is often felt in the upper arm, but may radiate to the front or back of the shoulder, or to the neck or elbow. Pain often occurs while sleeping, with overhead activities, or when reaching behind the back or in front of the body.

The initial treatment of a torn rotator cuff depends on many factors, including your age, tear size, whether or not you had an injury, the amount of weakness or stiffness you have, and quality of the remaining tendon and muscle. Surgery may or may not be required in the initial course of treatment. As the patient, you play a significant role in determining treatment, which will depend heavily on your goals and expectations.

Treatment

As mentioned before, recommended treatment depends on many factors. As the patient, you play a role in deciding this, as there may be more than one option available to you.

Nonsurgical

Not all rotator cuff tears require surgical repair. In fact, in some instances it may not be repairable with surgery. Once the tendon is torn, it will not spontaneously heal. However, certain tears may remain “stable”; that is, you may still have a pain-free shoulder with good function. Tears that are not repaired with surgery should be monitored closely. If you experience continuing symptoms (pain), you should

schedule a visit to be re-evaluated, to ensure the tear is not enlarging or affecting your shoulder function.

If treatment without surgery is selected, some gentle exercises are often recommended to maintain the existing strength and function of the shoulder. As well, a therapist may be able to help you with treatment such as electrical stimulation of the muscles, deep tissue massage, and stretching exercises.

Finally, some level of activity modification is often necessary to avoid a recurrence of symptoms. Temporarily avoiding repetitive overhead use of the arm, heavy lifting, sudden jerking or pulling activities, and/or sports may be necessary. Such modifications may be required on an ongoing basis.

The use of cortisone injections for the treatment of a torn rotator cuff is usually reserved for patients with long-standing and very large tears, with modest expectations for function, or who have co-existing arthritis of the shoulder. The use of injections in young or very active patients, or people who place higher demands on the shoulder, is not typically recommended.

Surgical

A variety of surgical techniques exist for the treatment of rotator cuff tears. The specific method recommended depends on a variety of factors.

Some tears are so large that they cannot be successfully repaired. In these situations, an arthroscopic procedure to clean out inflamed tissues, smooth uneven bone or tendon surfaces, and possibly repair a portion of the damaged tendon may be recommended. The goal of this procedure is to minimize pain; any improvements in function result from pain relief, rather than restoring normal tendon anatomy.

Tears which are “small” or “medium” in size (less than one inch) are often repaired successfully with arthroscopic surgery. During this procedure, special instruments are used through small incisions to secure the torn tendon back to bone. In cases where the tendon is too thin, or there is difficulty seeing the tear, a small open incision may be used to complete the repair.

Tears which are “large” or “massive” may be corrected using a variety of techniques. Which method is used depends on some of the factors mentioned previously. In some cases, an open repair through an incision on the top of the shoulder will be recommended. In other situations, an arthroscopic repair, with or without a small open incision, may be sufficient.

Other procedures that have been described include transferring other tendons from around the shoulder to substitute for the torn rotator cuff, or using free tissue grafts to substitute for the torn tendons. These procedures have yet to demonstrate additional benefit over some of the more standard methods described previously.

Outcome

No matter which operation is performed, physical therapy after surgery is critical to achieving a good result. Patients who remain motivated and follow the recommended aftercare generally do the best. While recovery after shoulder surgery can be slow, most patients are back to reasonably full activity 3-6 months after surgery. People often notice gradual improvement for up to 12-18 months after their operation. The main goal of surgery is pain relief, which is achieved 85-90% of the time. Improvements in strength and function are less predictable, but are achieved by some patients.

** The figures used in this handout were adapted from the University of Washington Department of Orthopaedic Surgery website.*