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Rotator Cuff Tears

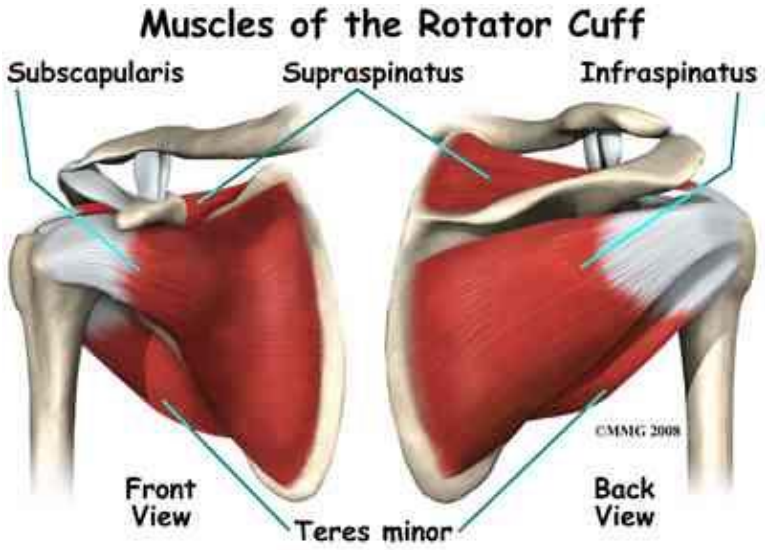
Jeff Horinek, MD

Symptoms

Rotator cuff tears are one of the most common causes of shoulder pain. Pain typically occurs in the front or side of the shoulder. The pain may radiate to the elbow. Symptoms are worse with overhead activity and often cause difficulty sleeping which can significantly affect quality of life. Most people have full range of motion if examined, but the motion may be limited by pain (the arm can be lifted by the examiner). Weakness is common, particularly with activities above shoulder level.

Anatomy

The rotator cuff is made up of four muscles (subscapularis, supraspinatus, infraspinatus, and teres minor). The rotator cuff surrounds the ball and socket joint (glenohumeral joint) and provides stability to the joint as well as movement. Because the shoulder is a shallow joint and the most mobile joint in the body, it requires the rotator cuff for stability. If left untreated, tears can lead to arthritis of the shoulder (rotator cuff arthropathy). This doesn't mean that good function can't be maintained with a tear. In fact, many people maintain function despite a tear because the shoulder remains balanced with the remaining rotator cuff and other muscles that control shoulder movement.



Muscle inserts into bone via tendon. In the vast majority of cases tears occur when the tendon pulls away from the bone. Broadly speaking, tears are classified as partial or full thickness. Partial tears go part way through the tendon, while full-thickness tears represent complete detachment. Frequently, an MRI will report "partial tearing." Most partial tears are not a problem. In fact, most people over the age of 40 to 50 have some changes within the rotator cuff or partial tears. The distinction with partial tears is when the tears are considered "high-grade," meaning that they go almost all the way through the tendon.

Causes

Rotator cuff tears may occur after an injury or repetitive activity over time, but most cases occur without an injury. As we age the rotator cuff tendon degenerates. Age and genetics are the greatest risk factors for a tear. Studies show that about 50% of people over the age of 65 have full-thickness rotator cuff tears. Most of these people don't even know they have a tear!

Treatment

Treatment for rotator cuff tears is based on age, health, and response to conservative treatment. The rotator cuff tendon is not capable of repairing itself. Rather, the tear will stay the same size or enlarge over time. In people under the age of 60, the risk of progression is about 50% in a two-year period. The ability to get healing with a surgical repair depends upon age, tear size, muscle atrophy, associated arthritis, and health (smoking and diabetes, for instance). One must also consider timing of repair. Traumatic tears have a better outcome if fixed within 3 months of injury. Additionally, after about six months of symptoms atrophy may occur. Unfortunately, atrophy of the rotator cuff is not considered reversible. Based on this, if someone desires repair, I typically recommend performing this within 6 months of beginning treatment for a degenerative (chronic) tear and 3 months for a traumatic (acute) tear.

Guidelines for surgery are general and must be individualized as noted above. Long-term studies show that surgical repair leads to greater improvement in function compared to physical therapy. This is because physical therapy does not heal a tear and it may sometimes progress in size. However, one must consider their activity level and length of recovery. As a general guideline, I recommend repair for all full-thickness tears in people under the age of 65 given the risk of increase in tear size. For people between the ages of 65 and 70, treatment is based on the above factors with health and activity expectations being the most important factors. For people over the age of 70, I nearly always recommend an attempt at conservative treatment. Surgery is considered if one does not respond to conservative treatment or if the tear is from a recent trauma.

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For partial tears, conservative treatment should almost always be attempted first since these tears progress slowly or may not progress at all. Then, surgery is considered if one does not respond to 4 to 6 months of conservative treatment.

Treatment includes:

Medications: Anti-inflammatories such as ibuprofen (Motrin or Advil) and naproxen (Aleve) are used to reduce pain and inflammation. The max dose for ibuprofen is 800 mg three times per day. The max dose for naproxen is 500 mg twice daily. Prolonged usage should be avoided and these should be taken with food since they can affect the stomach lining. If one experiences an upset stomach these should be stopped. These medications are often contraindicated in patient's on blood thinners.

Injection: Injection of a steroid (cortisone) may be used to provide pain relief and facilitate physical therapy. I perform these injections with an ultrasound machine. This allows direct visualization of the joint and improved accuracy of the injection. Up to 3 injections over a 2 year period are allowed. Beyond this there are typically diminishing returns and excessive injections may be detrimental to the rotator cuff. It is also important to note that injection within 3 months of surgery raises the risk for infection.

Alternative injections include Toradol (an anti-inflammatory agent similar to ibuprofen), prolotherapy, or platelet-rich plasma (PRP). I use Toradol in people who do not tolerate steroids. Prolotherapy involves injecting a substance such as sugar into tissue to "stimulate a healing response." I do not perform prolotherapy as it has not been shown to improve symptoms in rotator cuff tears. PRP involves taking a small amount of blood from a patient, spinning in a centrifuge to separate the growth factors from the red blood cells, and then injecting the growth factors back into the shoulder to potentially decrease pain. While PRP has anti-inflammatory properties, it has not been shown to heal the rotator cuff. Therefore, it is not covered by insurance and is an out-of-pocket expense. Typically a series of 3 injections are performed at weekly intervals for 3 weeks.

Therapy: Physical therapy with strengthening is one of the mainstays of treatment of rotator cuff tears. Studies show that despite not healing the rotator cuff, therapy can lead to substantial improvements in function with good patient satisfaction. The core exercises in strengthening the rotator cuff are provided at the end of this handout and can also be viewed at: www.KsShoulder.com/rehab (see Chapter 5). These exercises can be performed twice per day, 5 days a week.

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Surgery: Most tears, regardless of size can be repaired. I perform all my rotator cuff repairs arthroscopically. This is less invasive and therefore less painful than an open incision. It also allows a better view of the rotator cuff. This procedure requires general anesthesia and patients go home the same day. Small incisions are made in the shoulder, a scope is inserted, and the rotator cuff is repaired with anchors. Anchors are essentially headless screws which are placed flush with the bone. These anchors have sutures that are used to bring the tendon done to the bone so that the tendon can heal to the bone. The long-term outcome of this procedure is very good (>90% success in most cases) and the risk of complication is very low (1/5000 chance of infection). However, repair requires a long recovery period. The tendon takes about 12 weeks to heal into the bone. Therefore, a sling is worn for

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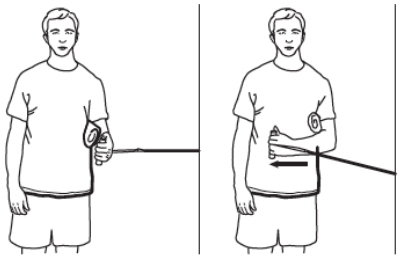
4 to 6 weeks after surgery depending on the tear size. Specific motion exercises afterwards are tailored to the tear pattern (patient-specific). The sling is removed at 4 to 6 weeks and motion is progressed. Strengthening is allowed at 8 to 12 weeks, followed by gym activities at 4 months. Full recovery takes 6 months for small tears and 12 months for large or massive tears.

Strengthening: The "4 pack" with Theraband

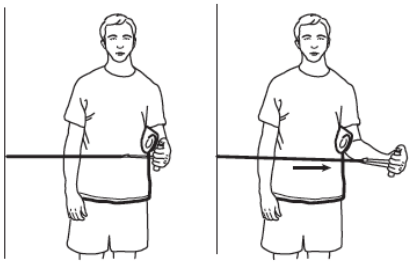
10 repetitions per set, 2 sets, twice daily

Therabands: red→ green→ blue

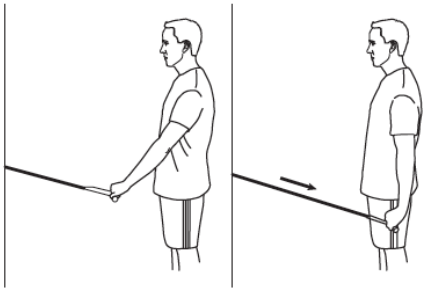
Inward rotation



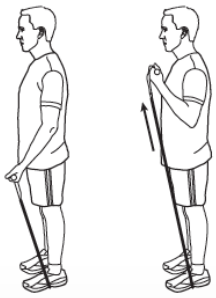
Outward rotation



Low row



Biceps Curl



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