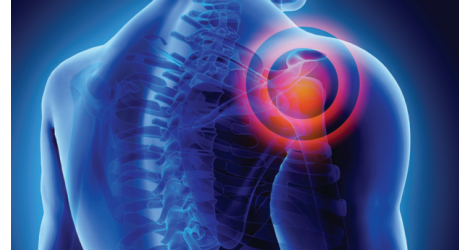


Rotator Cuff Tears



Anatomy

The rotator cuff consists of four muscle-tendon units, subscapularis, supraspinatus, infraspinatus, and teres minor, that originate on the shoulder blade, or scapula, and attach to the tuberosities (bumps of bone) on the ball of the humerus. The role of the rotator cuff is to keep the ball of the humerus centered in the shoulder socket as the shoulder moves through its range of motion and helps to start the movement of the shoulder. The rotator cuff is the primary stabilizer during movement of the ball and socket, or glenohumeral joint. Overuse and traumatic injuries to the rotator cuff are among the most common problems in the shoulder.

Types of Tears

A tear of the rotator cuff means that one or more of the tendons no longer attaches completely to the ball of the humerus. Tears most commonly occur in the top tendon of the rotator cuff, the supraspinatus, but may also involve any of the other rotator cuff tendons. Tears are generally thought of as either partial thickness tears or full thickness tears.

Partial Thickness Tears

Partial thickness, or incomplete tears of the tendon do not travel through the entire tendon meaning that a portion still attaches to bone. They are located on either the top surface (bursal tears), the undersurface (articular tears), or within the tendon itself (intrasubstance tears).

Full Thickness Tears

Full thickness tears are complete tears of the tendon. They go all the way through the tendon, meaning that the tendon is detached from the bone. This leads to a hole in the tendon, resulting in a communication between the glenohumeral joint and the subacromial bursa. Full thickness tears can involve one tendon or multiple tendons.

Causes of Tears

Tears of the rotator cuff can occur after an injury to the shoulder (traumatic tears) or as a result of wear/degeneration of the tendon with age and time (degenerative tears). Degenerative tears are much more common than traumatic tears.

Degenerative Tears

The rotator cuff, like other tissues in the body, degenerates with age and time. This is a natural consequence of getting older. Degenerative tears generally begin to appear in the forties and fifties, and become more common as we get older. These tears are generally referred to as chronic tears and there are a number of factors that lead to their occurrence:

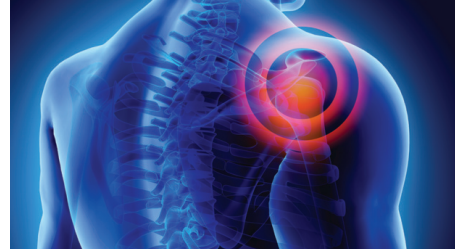
Poor Blood Supply – The blood supply to the rotator cuff, especially the supraspinatus, is reduced as we age. Because a good blood supply is necessary for tissue healing, a poor blood supply may contribute to degeneration and tearing of the rotator cuff. In addition to aging, smoking, diabetes and other health issues, may also reduce the blood supply to the rotator cuff.

Repetitive Stress – Repeating the same activity over and over puts stress on the joints of the body, including the soft tissues that surround them. Sports, work, and other activities that cause repetitive stress to the shoulder may contribute to the development of rotator cuff tears.

Bone Spurs – As we age, the ligament above the rotator cuff, known as the coracoacromial ligament, can calcify leading to the formation of bone spurs. These bone spurs can rub on the rotator cuff as the shoulder moves, which may contribute to tearing of the rotator cuff over time.



Rotator Cuff Tears



Traumatic Tears

Tears that occur as a result of a shoulder injury are called traumatic or acute tears. They can occur with a fall or when we lift something heavy in an uncontrolled way. They can also occur with other injuries of the shoulder, such as a fracture or dislocation. The rotator cuff is more likely to tear as the result of an injury as we get older because of weakening of the rotator cuff with age. This means that tears are sometimes referred to as “acute-on-chronic,” which is a pre-existing chronic tear that is made worse as the result of an injury.

Symptoms of Rotator Cuff Tears

Rotator cuff tears are most commonly associated with pain in the shoulder. The pain is often worse at nighttime, and can be made worse by any activities that involve the use of the shoulder. The pain may be mild at the start, only located at the shoulder, and only present with shoulder activities. With time, the pain may worsen, becoming more frequent and associated with rest, and may also radiate down the arm and to the area around the shoulder blade and neck.

In addition to pain, there may also be weakness of the shoulder, which may affect lifting, pushing, or pulling, and in some cases may make lifting the arm to shoulder height and above difficult to perform. This can also make performing activities of daily living difficult. There also can be catching or popping in the shoulder during movement or with certain activities.

Traumatic or acute tears of the rotator cuff are often associated with severe pain and a snapping or tearing sensation in the shoulder. Following a traumatic or acute tear, there is often a new onset of difficulty raising the arm or weakness with activities involving the use of the shoulder.

Although rotator cuff tears can be painful, many degenerative or chronic rotator cuff tears are asymptomatic and not associated with pain or weakness. Although it is not clear how many rotator cuff tears do not have symptoms, it is thought that rotator cuff tears without symptoms are increasingly common with increasing age. It is also not clear what causes a rotator cuff tear without symptoms to become symptomatic. What is known is that it is more likely to have a tear in one shoulder if there is a symptomatic tear in the other shoulder.

Physician or Health Professional Assessment

Your doctor or therapist will ask you questions about your shoulder symptoms and your medical and social history as part of the assessment of a painful shoulder. You will also be examined after describing your symptoms and history to your doctor or health professional. The examination will include an assessment of the position of your shoulder and your posture and whether there is any deformity, wasting, or changes to the skin. Your shoulder girdle will be assessed for areas of tenderness and you will be asked to demonstrate the range of motion of your shoulder by moving your shoulder and arm in a number of different directions. The strength of the shoulder girdle muscles will also be examined. A number of special tests or maneuvers will also be performed to further assess your rotator cuff and shoulder.

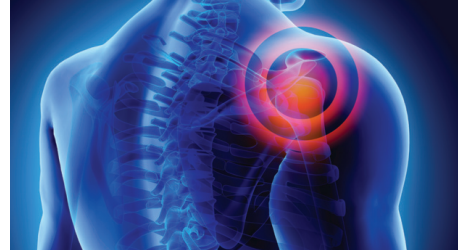
Imaging

The shoulder and rotator cuff can be imaged in a number of different ways.

X-rays – X-rays of the shoulder provide a picture of the bones and joints that make up the shoulder girdle, but do not show any of the soft tissues around the shoulder, including the rotator cuff. The x-rays can provide information on the presence of arthritis, any abnormalities of the bone, and can provide clues regarding the status of the rotator cuff such as bone spurs.



Rotator Cuff Tears



Ultrasound (US) – Ultrasound uses sound waves to provide a picture of the structures of the shoulder girdle. It is a dynamic test and the individual performing the ultrasound may be able to describe what is seen as the test is being performed. Ultrasound can provide information about the presence and size of rotator cuff tears, as well as the quality of the muscles of the rotator cuff.

Magnetic Resonance Imaging (MRI) – MRI provides the most detailed picture of the soft tissues and structures that make up the shoulder girdle. It provides information about the location and size of the rotator cuff tear as well as other damage that may be present in the shoulder. It can also provide clues as to whether the tear is “new” or “old”; the quality of the tendons and muscles of the rotator cuff, and whether the tear may be repairable with surgery.

Your doctor or health professional will combine the information you provided about your symptoms and medical history, with the findings on physical examination and imaging, to come up with a diagnosis and treatment plan for your shoulder. It is very important to understand that findings on imaging, especially an MRI, may be age related changes and not related to the symptoms you are experiencing.

Treatment

There are several types of treatment for shoulder pain from a rotator cuff tear. These include:

- Therapy (methods such as supervised exercise used to promote healing)
- Activity modification
- Anti-inflammatories (both oral and topical)
- Surgery (in a small number of cases)

In addition, there are alternative therapies such as therapeutic massage, acupuncture or acupressure, and meditation that may improve shoulder symptoms. Your doctor or health professional can advise you on the benefits and risks of any treatment options being considered.

Non-Surgical Treatment

Treatment depends on the cause of the shoulder pain and other shoulder symptoms. In most cases, therapy is the foundation of any treatment program. It is important to understand that in almost all cases, even though the pain may initially increase at the start of treatment, the risk of further injury to your shoulder is rare when participating in a supervised therapy program.

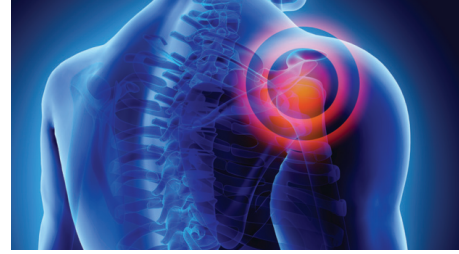
Therapy – Specific exercises will restore movement and strengthen your shoulder. Your exercise program will include stretches to improve flexibility and range of motion. Strengthening the muscles that support your shoulder can relieve pain and prevent further injury. This is often successful in more than 80% of patients with symptoms from a rotator cuff tear.

Rest and Activity Modification – Adjusting how certain activities are performed, avoiding activities that cause symptoms, and short periods of rest, may help to reduce shoulder symptoms from a rotator cuff tear. It is important to recognize that complete avoidance of use of the shoulder may be detrimental and risk shoulder stiffness.

Non-steroidal Anti-Inflammatory Medication – Drugs like ibuprofen and naproxen, as well as topical anti-inflammatories, may reduce the pain and swelling that occurs in association with a rotator cuff tear. This may be helpful with pain at nighttime or symptoms that occur during or after therapy.



Rotator Cuff Tears



Steroid Injections – If rest, medications, and therapy do not relieve your shoulder pain, an injection of local anesthetic and cortisone may be helpful. Cortisone is a very effective anti-inflammatory medication and may reduce the pain that occurs from the inflammation of a rotator cuff tear. Injections should only be used after discussing the risks and benefits with your doctor or health professional. It should also always be used in combination with a therapy program to ensure that the improvement that may be seen with the injection is maintained over time.

The advantage of non-surgical treatment is that it avoids the major risks of surgery, such as:

- Post-surgical pain
- Infection
- Permanent stiffness
- Anesthesia complications
- Lengthy recovery time

The disadvantages of non-surgical treatment are:

- Tear size may increase over time (it is not clear which tears will become larger over time)
- Activities may need to be limited or modified (this may also be true with surgical treatment)

Surgical Treatment

Surgical treatment is generally recommended only when non-surgical treatment has been unable to provide a relief of symptoms. Surgery, or a rotator cuff repair, is most often performed for pain that does not improve with appropriate therapy, but may also be performed if you are younger or if you use your arm for overhead work or sports. Surgery is most commonly indicated when:

- Symptoms have persisted for 6 to 12 months or longer
- There is significant weakness or loss of function of the shoulder
- The tear is larger and the quality of the surrounding tendon and muscle is of good quality
- The tear is acute (happened as a result of a significant injury or trauma)

Rotator cuff repair usually involves the reattachment of the torn tendon back to the tuberosities (bumps of bone) on the head of the humerus. This may be done arthroscopically or open and there are many different options for repairing the rotator cuff. Your orthopaedic surgeon will discuss the best option with you based on the type of rotator cuff tear and the history of your shoulder.

For more information: The Canadian Orthopaedic Foundation provides a free booklet, *Shoulder Surgery – Planning For Your Best Results*, which outlines general preparations, complications monitoring, a diary of progress and more. Visit www.movepainfree.org to download your free copy.

