Rotator Cuff Injury and Inflammation

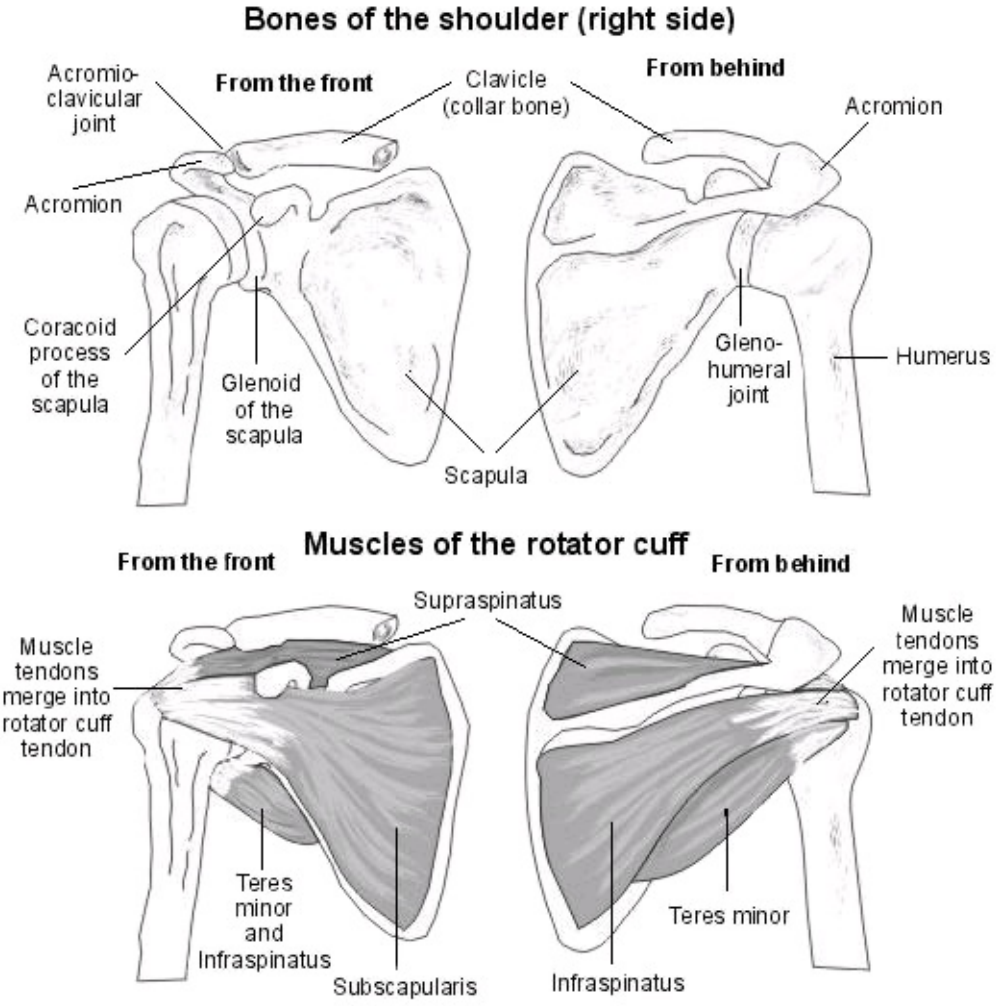
Rotator cuff injury and inflammation is one of the most common causes of shoulder pain. There are three common conditions that can affect the rotator cuff: rotator cuff tendonitis, rotator cuff impingement syndrome and a rotator cuff tear. Most people with rotator cuff problems can be successfully treated by a combination of rest, painkillers, anti-inflammatories, physiotherapy and steroid injections. Surgery is sometimes an option.

The shoulder joint

There are three bones in the shoulder region, the clavicle (collar bone), the scapula (shoulder blade) and the humerus (upper arm bone). The scapula is a triangular-shaped bone that has two important parts to it: the acromion and the glenoid. The three bones in the shoulder region form part of two main joints:

- The acromioclavicular joint between the acromion of the scapula and the clavicle.
- The glenohumeral joint between the glenoid of the scapula and the humerus.

There are also a number of muscles, ligaments and tendons around the shoulder. Ligaments are fibres that link bones together at a joint. Tendons are fibres that attach muscle to bone.



What is the rotator cuff?

The rotator cuff is a group of four muscles that are positioned around the shoulder joint. The muscles are named:

- Supraspinatus
- Infraspinatus
- Subscapularis
- Teres minor

The rotator cuff muscles work as a unit. They help to stabilise the shoulder joint and also help with shoulder joint movement. The four tendons of the rotator cuff muscles join together to form one larger tendon, called the rotator cuff tendon. This tendon attaches to the head of the humerus (the bony surface at the top of the upper arm bone). There is a space underneath the acromion of the scapula, called the subacromial space. The rotator cuff tendon passes through here.

What are the types of rotator cuff injury/inflammation?

There are a number of different problems that can affect the rotator cuff and lead to rotator cuff injury or inflammation. The most common problems include:

- Rotator cuff tendonitis
- Rotator cuff impingement syndrome
- Rotator cuff tear

Rotator cuff tendonitis

Who gets rotator cuff tendonitis?

Rotator cuff tendonitis is the most common cause of shoulder pain.

What causes rotator cuff tendonitis?

Rotator cuff tendonitis is caused by irritation and inflammation of the tendons of the rotator cuff muscles. It tends to have an acute (sudden) onset. There is often a specific preceding injury. It can happen because of recent overuse of the shoulder. For example, it can occur in athletes, particularly those who participate in throwing sports. In non-athletes, there may be a history of recent heavy lifting or activities involving repetitive movements of the shoulder.

Sometimes the rotator cuff tendons can become calcified. This is when calcium is deposited in the tendons, due to long-standing inflammation. This is called calcific tendonitis.

What are the symptoms of rotator cuff tendonitis?

The main symptoms are an acute (sudden) onset of pain and painful movement of the shoulder. Pain is worst when you use your arm for activities above your shoulder level. This means that the pain can affect your ability to lift your arm up - for example, to comb your hair or dress yourself. Swimming, basketball and painting can be painful but writing and typing can produce little in the way of pain. Pain may also affect sleep.

How is rotator cuff tendonitis diagnosed?

Your doctor is usually able to make the diagnosis just by talking to you and examining your shoulder. They usually start by asking questions about your shoulder. These questions may include when your shoulder problems started, whether you have had any specific injury and what aggravates your shoulder problem.

They may then perform an examination of your shoulder. This usually involves moving your shoulder in various positions. One of the tests that can help to diagnose rotator cuff tendonitis is called the painful arc test. Your doctor may ask you to start with your arm by your side and then lift your arm outwards from your side in an arc. In rotator cuff tendonitis, pain is usually felt at a maximum between 70 and 120° in this arc.

Occasionally, your doctor may suggest an X-ray of your shoulder or they may refer you for more detailed investigations such as an ultrasound scan or an MRI scan.

What are the treatment options for rotator cuff tendonitis?

- **Rest**: this is the main treatment for rotator cuff tendonitis. You should stop any aggravating activities that may have brought on the tendonitis. However, do not completely rest your shoulder. You should still try to keep your shoulder mobile.
- **Painkillers**: painkillers such as paracetamol are usually helpful. Occasionally, stronger painkillers may be needed.
- **Anti-inflammatories**: these are painkillers but they also reduce inflammation and are commonly prescribed. They include ibuprofen, diclofenac, and naproxen. Side-effects sometimes occur with anti-inflammatories. Always read the leaflet that comes with the medicine packet for a full list of cautions and possible side-effects.
- **Physiotherapy**: your doctor may refer you to a physiotherapist for advice and exercises.
- **Steroid injections**: these can help to reduce the inflammation in the rotator cuff tendons. Steroid injections can be repeated if the initial response is good.

Calcific tendonitis is treated in the same way with rest, anti-inflammatory medication, steroid injections and physiotherapy. Rarely, surgery is needed. An alternative to surgery is a procedure called lithotripsy. In lithotripsy, shock waves are generated and delivered by an external power source to the affected tendon(s), using a specialised machine known as a lithotripter. This helps to break up the deposits of calcium.

What is the prognosis (outlook) for rotator cuff tendonitis?

If rotator cuff tendonitis is adequately treated, there can be complete recovery.

If treatment of any rotator cuff problem is delayed or inadequate, it can lead to the affected person being cautious about moving their shoulder because of pain. This means that the shoulder can stiffen up and can lead to adhesive capsulitis (frozen shoulder). See separate leaflet called *Frozen Shoulder*.

Rotator cuff impingement syndrome

What causes rotator cuff impingement syndrome?

As discussed above, the rotator cuff tendon passes through the subacromial space (the space underneath the acromion part of the scapula, or shoulder blade). In impingement syndrome, the rotator cuff tendon gets trapped in the subacromial space. The tendon is repeatedly scraped against the shoulder blade which can eventually lead to fraying of the tendon. This means that the tendon weakens and is more likely to tear.

Impingement syndrome can occur because of long-standing wear and tear. It can also happen due to problems with the bone of the acromion. These can include arthritis and bony spurs (protrusions).

What are the symptoms of rotator cuff impingement syndrome

Rotator cuff impingement syndrome also causes shoulder pain. However, the pain tends to be more chronic (long-standing). The pain tends to be worse during activities when your arm is raised over your head. Pain can also be worse at night-time.

How is rotator cuff impingement syndrome diagnosed?

Again, your doctor will usually diagnose rotator cuff impingement syndrome just by talking to you and examining your shoulder. You will experience the same painful arc as described above when your shoulder is moved.

Your doctor may also perform a special test when they examine your shoulder - called Neer's Impingement Test. In this test they ask you to straighten your arm. They then raise your arm forward, keeping your palm pointing away from your body. If this test is painful, the test is positive and rotator cuff impingement syndrome is likely.

What are the treatment options for rotator cuff impingement syndrome?

The treatment for rotator cuff impingement syndrome is similar to that for rotator cuff tendonitis. You should rest from any activity that involves repetitive movement of the shoulder. This particularly includes overhead activity such as that performed by plasterers or painters and decorators. This may mean that you have to modify or change your work activities. However, be careful to keep your shoulder mobile so that it does not stiffen up. Painkillers, anti-inflammatories, physiotherapy and steroid injections can help.

If these treatments do not work, some people with rotator cuff impingement syndrome need to have an operation to widen the subacromial space. This is usually referred to as a decompression operation.

What is the outlook (prognosis) for rotator cuff impingement syndrome?

The natural history of rotator cuff disease is poorly understood. In some people a rotator cuff impingement syndrome may lead to excessive wear and tear of the rotator cuff tendon. This in turn may lead to weakening of the tendon and the tendon may tear. But, it is not known how many people with impingement develop a cuff tear.

Rotator cuff tears

Who gets rotator cuff tears?

Rotator cuff tears are most common in people over the age of 40 years.

What causes a rotator cuff tear?

Rotator cuff tears are usually tears in the rotator cuff tendon rather than in the muscles themselves. In younger people, a rotator cuff tear normally happens as a result of trauma (injury) due to a fall or accident. In older people, they are often caused by rotator cuff impingement syndrome (see above).

Rotator cuff tears can be minor/partial or full/complete depending on the degree of damage to the tendon.

What are the symptoms of a rotator cuff tear?

Pain is the most common symptom of a rotator cuff tear. The pain tends to be over the front and outer part of the shoulder. It is worse when your shoulder is moved in certain positions. For example, when your arm is moved above your head on dressing or combing your hair, or moved forwards to reach for something.

Your shoulder or arm can also feel weak and you may have reduced movement in your shoulder. Some people feel clicking or catching when they move their shoulder.

How is a rotator cuff tear diagnosed?

- **History and examination**: again, your doctor will usually be able to diagnose a rotator cuff tear by talking to you and examining your shoulder.
- **The drop arm test**: this is one of the tests that can help to diagnose a rotator cuff tear. If your doctor carries out this test they will ask you to stand with your arm by your side. They will lift your arm outwards from your side and up towards your head. They will then ask you to move your arm back down slowly towards your side. In a rotator cuff tear, you are usually able to lower your arm slowly to 90° but when you try to lower your arm below 90°, it drops quickly to your side because of the tear.
- **Other investigations**: occasionally, your doctor may suggest an X-ray of your shoulder or they may refer you for more detailed investigations such as an ultrasound or MRI scan.
- **Referral to a specialist**: if your doctor suspects a complete/full tear of your rotator cuff, they may suggest that they refer you to an orthopaedic surgeon (bone and joint specialist).

What are the treatment options for a rotator cuff tear?

- **Painkillers**: painkillers such as paracetamol are usually helpful in rotator cuff tears. Occasionally, stronger painkillers may be needed.
- **Anti-inflammatories**: your doctor may also suggest that you take regular anti-inflammatories. These are painkillers but they also reduce inflammation and are commonly prescribed. They include ibuprofen, diclofenac, and naproxen. Side-effects sometimes occur with anti-inflammatories. Always read the leaflet that comes with the medicine packet for a full list of cautions and possible side-effects.
- **Ice packs**: these can also help to reduce pain. A bag of frozen peas is an easy ice pack to use in the home.
- **Physiotherapy**: this may be helpful for people with minor rotator cuff tears. Your doctor may refer you to a physiotherapist for advice and shoulder exercises.

- **Steroid injections**: sometimes your doctor may suggest steroid injections around your shoulder joint as a treatment for minor tears. The idea is that the injection may help to reduce any inflammation.
- **Surgery**: this is sometimes needed in large/complete tears. Surgery usually involves decompression (widening) of the space underneath the acromion and may also include repair of the rotator cuff tendon. The surgery can be done using either a keyhole or an open method.

What is the prognosis (outlook) for rotator cuff tears?

Symptoms caused by a rotator cuff tear may be successfully eased with non-surgical treatments, including rest, physiotherapy, painkillers, anti-inflammatories and steroid injections. Surgery may be considered when troublesome symptoms persist despite the above treatments. However, there is no definite agreement on the best treatment for people with rotator cuff tears or when surgery is needed.

Further reading & references

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Document ID: 8611 (v6)	Last Checked: 20/04/2012	Next Review: 20/04/2015
