



Rotator Cuff Injuries

What is a rotator cuff?

The rotator cuff is a group of four tendons that stabilise the shoulder joint. The tendons hook up to the four muscles that move the shoulder in various directions. There are four muscles whose tendons comprise the cuff, namely:

Supraspinatus - is responsible for elevating the arm and moving it away from the body

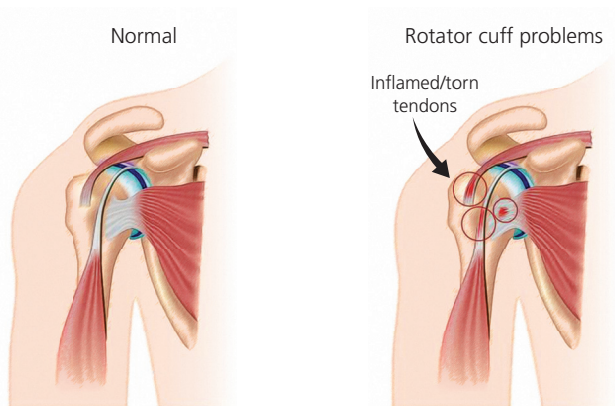
Infraspinatus - assists the lifting of the arm during turning the arm outward

Teres minor - also helps in the outward turning of the arm.

Subscapularis - moves the arm by turning it inward (internal rotation)

How are rotator cuff injuries caused?

The rotator cuff is commonly injured by trauma, such as from falling and injuring the shoulder or overuse in sports. Rotator cuff injury is particularly common in people who perform repetitive overhead motions that can stress the rotator cuff. It can be injured because of degeneration with ageing or inflammation due to tendinitis, bursitis, arthritis of the shoulder.



What are the symptoms of a rotator cuff injury?

A rotator cuff injury's signs and symptoms may include:

- ❏ Pain and tenderness in your shoulder, especially when reaching overhead, reaching behind your back, lifting, pulling or sleeping on the affected side. It can be felt when you reach up to comb your hair, bend your arm back to put on a jacket or carry something heavy. Lying on the affected shoulder also, can be painful. If you have a severe injury, such as a large tear, you may experience continuous pain and muscle weakness. The pain can diminish and result in a frozen shoulder

- Shoulder weakness
- Loss of shoulder range of motion
- Inclination to keep your shoulder inactive

How is the rotator cuff injury diagnosed?

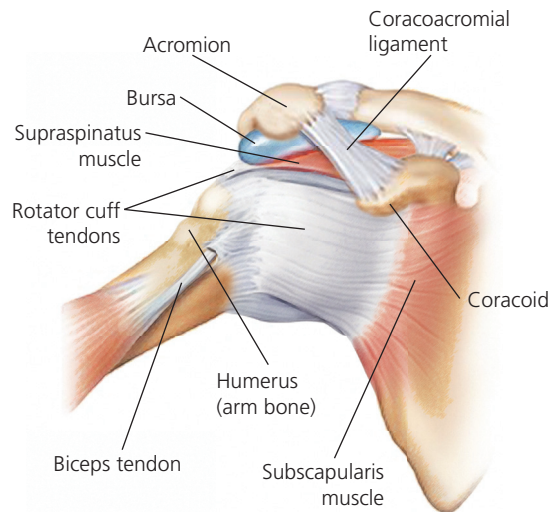
- A comprehensive history of symptoms and increased pain with the manoeuvre of the shoulder helps a doctor to diagnose the rotator cuff injury. The history of activities and how the pain started, what incident caused it, can give a clear cut diagnosis of rotator cuff injury. The pain is due to local inflammation and swelling in the injured tendons of the rotator cuff. Additionally, with severe tendon tears of the rotator cuff, the arm falls due to weakness (positive drop sign) when moved away from the body
- X rays - Sometimes plain X-rays can show bony injuries which suggest long-standing severe rotator cuff disease, which it has been present for some time
- Arthrogram - An arthrogram involves injecting contrast dye into the shoulder joint to detect leakage out of the injured rotator cuff
- MRI - The MRI is a non-invasive imaging test which uses a giant magnet and computer to produce fine images of the tissues of the shoulder. An MRI has the added advantage of providing more information than either X-ray or an arthrogram, especially if a condition other than rotator cuff disease is present

The role of the rotator cuff

When your rotator cuff is healthy, your shoulder lets you do a lot of things. This includes reaching, throwing, pushing, pulling, and lifting. A healthy shoulder feels strong and stable. It can move your arm up, down, around, across, and back as needed. When your rotator cuff is damaged, even simple movements can be painful.

Foundation of a healthy cuff

The rotator cuff is made up of muscles and tendons that support the shoulder joint. The joint is a ball joint, formed by the head of the humerus



The muscles and tendons of the rotator cuff surround the shoulder joint.



(arm bone) fitting into the socket of the scapula (shoulder blade). The rotator cuff controls the shoulder's movement and helps keep it stable.

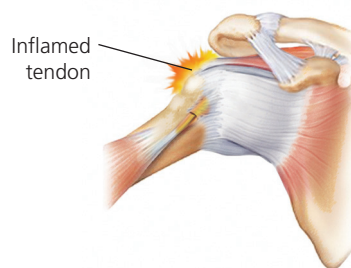
- ✦ The coracoid and acromion are two parts of the scapula
- ✦ The bursa is a fluid filled sac that cushions the rotator cuff
- ✦ Tendons are tough cords of connective tissue that attach the rotator cuff muscles to the humerus
- ✦ The rotator cuff consists of four muscles: The supraspinatus runs over the top of the humeral head. The subscapularis runs across the front of the humeral head. The infraspinatus and teres minor both run across the back of the humeral head

Symptoms of rotator cuff problems

Damage to your rotator cuff muscles or tendons can be caused by the wear and tear of daily activities or sports or by a sudden injury. This damage can cause weakness and pain in your shoulder. Even simple tasks can become hard to do. Your healthcare provider will tell you which of the following conditions match your shoulder problem.

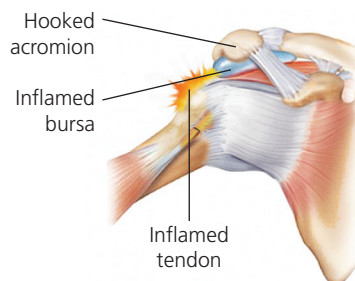
Overuse tendinitis

Repetitive activities like throwing or reaching overhead, can strain your rotator cuff tendons. This can cause the cuff to become inflamed (irritated and swollen) or frayed from overuse.



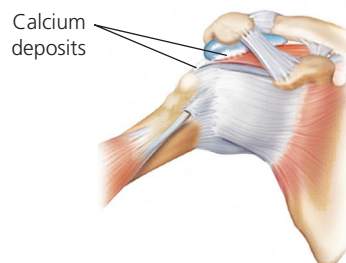
Impingement syndrome

Impingement (pinching) can happen when the bursa or tendons become swollen. This can reduce space between the bursa and the acromion, squeezing the soft tissues painfully against the bone. In some cases, a naturally hooked acromion further reduces space and irritates the bursa.



Calcific tendinitis and calcific bursitis

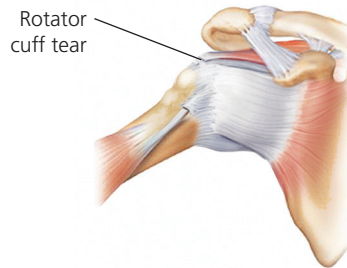
A sudden or chronic injury or inflammation can cause calcium deposits to form in your rotator cuff. When deposits form within the tendons of the cuff, it's called calcific tendinitis. When deposits build up in the bursa, it's called calcific bursitis. These hard deposits irritate the soft tissues of the joint.





Partial and/or complete tears

Tearing of the rotator cuff muscles or tendons can be caused by severe tendinitis or a sudden injury. In some cases, only a small bit of tendon will tear (partial tear) or the tendon may tear all the way through (complete tear). This can result in pain and may cause shoulder weakness.



Evaluating your injury

The first step towards healing your injured rotator cuff is an exam conducted by an orthopaedist (bone and joint doctor). The doctor will ask about your shoulder problem. He or she may also ask about other health problems. An examination of the shoulder and a range of tests may be used, to learn more about your injury. Then, you and your doctor can talk about the course of treatment that will be best for you.

Your shoulder exam

Your doctor may begin by asking about your shoulder pain. Where does it hurt? How often? Is the pain affecting work or daily life? The doctor will then feel and move your shoulder to check for signs of weakness. Tests of your shoulder's movement will tell the doctor about your rotator cuff's flexibility, strength and stability.

Range of motion

The doctor may test your shoulder's range of motion. This means, seeing if you can still perform normal movements, without pain.

During the "empty can" test, your arm is placed as if you're pouring soda from a can. If you feel pain as you push up against your doctor's hand, you may have an irritated rotator cuff.

Imaging Tests

Imaging tests can tell your healthcare provider even more about your injury. Several imaging tests are used, including X-rays, magnetic resonance imaging (MRI), and arthrograms. Other tests such as ultrasound (which creates an image using painless sound waves) might also be used.





X-rays

These images can reveal problems with the bones in the shoulder, such as a hooked acromion. These problems can affect your rotator cuff.

Magnetic resonance imaging (MRI)

This test creates images to provide views of the soft tissues of the shoulder joint. MRI can reveal inflammation, tears and calcium deposits.



Arthrograms

During this test, a special contrast fluid (dye) is injected into the shoulder joint. If the rotator cuff is torn, dye leaks into the area outside the cuff.

Relieving shoulder pain

Your healthcare provider might suggest several non-surgical treatments for pain relief. You can do some of these treatments at home. Others may be done in the healthcare provider's office. To help relieve pain, you may be asked to try one or more of the treatments below. Be sure to follow any instructions you are given.

Active rest

Active rest means that you should simply avoid movements or tasks that cause your shoulder pain. These could include overhead activities, heavy lifting or repetitive motions. Keep your neck, shoulders and hips in line when standing and sitting. Sit in chairs that support your back and arms. Rest your feet flat on the floor. Keep items within easy reach. Vary your activity to reduce the risk of repetitive motion stress. Be sure to give your shoulder time to rest and recover between tasks.

Note: Don't stop using your shoulder completely - this can cause it to stiffen or "freeze". But, if a movement causes more than slight discomfort, don't do it.



Ice

Ice reduces inflammation and relieves pain. Apply an ice pack for about 15 minutes, two or three times a day. You can also use a bag of frozen peas, instead of an ice pack. The bag will mould nicely to the shape of your shoulder. A pillow placed under your arm, may make you more comfortable.

Note: Don't put the cold item directly on your skin. Place it on top of your shirt or wrap it in a thin towel or washcloth.



Heat

Heat may soothe aching muscles, but it won't reduce inflammation. You can use a heating pad or take a warm shower or bath. Do this for 10 to 15 minutes.

Note: Avoid heat when pain is constant. Heat is best when used for warming up before an activity. You can also alternate ice and heat.

Medication

You may be told to try over-the-counter pain relievers, anti-inflammatories or your healthcare provider may prescribe medication to relieve pain and inflammation. Ask how and when to take your medication. Be sure to follow all instructions.

Note: Ask your healthcare provider if over-the-counter medications are right for you. Be sure to mention any other topical or oral medications you might be using.



Injection therapy

Injection therapy may be used to help diagnose or treat your problem. It may also be used to reduce pain and inflammation. The doctor may begin by numbering a small spot on the shoulder. He or she then injects an anti-inflammatory medication into the shoulder. It can take a few hours to a couple of days before the injection helps.

Note: Talk to your healthcare provider about the possible risks and benefits at injection therapy.

Other treatments

Your healthcare provider may perform other types of treatments to help relieve your pain. These treatments can include the following:



- ❏ **Electrical stimulation** can help reduce pain and swelling. Your healthcare provider will attach small pads to the shoulder. A mild electric current then flows into your shoulder. You may feel tingling, but not pain
- ❏ **Ultrasound** can help reduce pain. First a slick gel or medicated cream is applied to the shoulder. Then your healthcare provider places a small device over the area. The device uses sound waves to reduce inflammation and pain. This treatment is pain-free

Restoring shoulder function

Shoulder exercises such as these are designed to help restore your shoulder's function. They may be assigned before or after surgery, depending on your injury. Follow all exercise instructions from your healthcare provider carefully.

Pendulum exercise

- ❏ Lean over with your good arm supported on a table or chair. Relax the injured arm, letting it hang straight down
- ❏ Slowly move the relaxed arm in a small circle. Rotate 20 times. Reverse direction and repeat. Then, slowly swing the arm back and forth. Next, swing it from side to side



Note: Do this exercise three times a day. Do each arm movement 20 times in each direction.

Wall walk

- ❏ Stand with your injured shoulder about two feet away from a wall
- ❏ Raise your arm to shoulder level and gently 'walk' your fingers up the wall, as high as you comfortably can
- ❏ Hold for 10 seconds. Then walk the fingers back down. Repeat three to five times



Note: Ask your healthcare provider if it's safe for you to do this stretch.



Pretzel twists

- ❏ Reach the injured arm over your good shoulder, keeping your good arm, level. Use the back of your good hand to gently press your injured arm toward your shoulder. Repeat one to three times, holding for 10 to 15 seconds
- ❏ Reach behind your head with your good arm, holding a towel. Grasp the towel behind your back with your injured arm. Gently pull up with your good hand. Repeat one to three times, holding for 10 to 15 seconds
- ❏ Place your hands together behind your body. Gently use your good hand to lift your injured arm up and back. Repeat one to three times, holding for 10 to 15 seconds



Restoring shoulder strength

Exercises such as these might be assigned by your healthcare provider or physical therapist. They can help to strengthen your shoulder and protect it from future injuries. Again, be sure to ask your healthcare provider if exercises like these are right for you.

Internal rotation

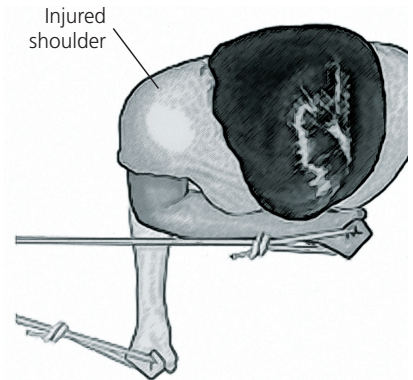
- ❏ Attach rubber tubing or a bungee cord to a doorjamb or any other stationary object
- ❏ Stand with your injured side towards the door – far enough away, that the tubing is just starting to stretch
- ❏ Keeping your elbow against your side and your arm in an “L” shape, slowly pull the tubing across your body
- ❏ Slowly return to the starting position. Repeat 5 to 15 times





External rotation

- ❏ Attach rubber tubing or a bungee cord to a doorjamb or any other stationary object
- ❏ Stand with your injured side away from the door – far enough that the tubing is just starting to stretch
- ❏ Keeping your elbow against your side and your arm in an “L” shape, slowly pull the tubing away from your body
- ❏ Slowly return to the starting position. Repeat 5 to 15 times



Scapular stabilisation

- ❏ Lean over with your good arm supported on a table or chair. Relax the arm on the injured side, letting it hang straight down. Form your hand into a loose fist
- ❏ Keep your shoulder down and your arm straight. Lift your arm up and away from your body until it points straight out
- ❏ Hold for five seconds, then slowly lower your arm back to its starting position. Repeat 10 times

Note: If your elbow starts to feel tired or sore, you can change your arm position. Flex the elbow gently inward, so the arm no longer makes a straight line.



Rotator cuff surgery

If your pain does not improve with other treatments, your doctor may suggest surgery. Rotator cuff surgery can help correct problems like impingement, calcium deposits or tears. You may need to stay overnight in the hospital or surgery center, depending on the type of surgery.

Things to do before surgery

- ❏ Stop taking anti-inflammatory medication, including aspirin, before surgery as directed
- ❏ Tell your doctor about any prescription or over-the-counter medications, herbs or supplements that you take. Ask if you should stop taking any of these before surgery



❏ Don't eat or drink anything after midnight, the night before surgery. This includes water. If you have a medication you can't skip, take it with only a sip or two of water

❏ Arrange for a family member or friend to give you a ride home

The day of your surgery

Arrive at the hospital or surgery center with enough time to check in. You will be given a gown to change into. Before surgery, a doctor will talk to you about the anaesthesia that will be used, to keep you pain free during the surgery. You may be asked by several people to confirm which shoulder is being operated on. This is for your safety. Your injured shoulder may also be marked with a pen.



Risks and complications

As with any surgery, complications may arise. These include, but are not limited to:

- ❏ Infection
- ❏ Injury to nerves or blood vessels
- ❏ Risk from anaesthesia

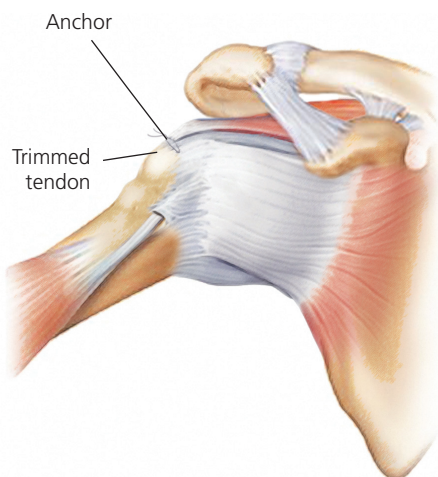
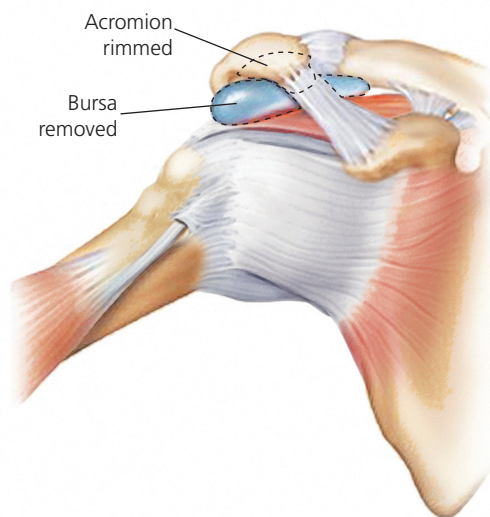
Repairing the shoulder

Your surgeon will decide the best kind of surgery for you. The surgery will depend on the type, size and location of your rotator cuff injury. There are two different ways in which the surgery can be performed:

- ❏ **Arthroscopic surgery** is done with a thin magnifying instrument called an arthroscope. A small camera on the scope sends images to a video monitor. This lets the surgeon see and work inside the shoulder joint. Only small incisions are needed to insert the scope and other instruments into the shoulder
- ❏ **Open surgery** is done by making a single, large incision on the shoulder. This lets the surgeon to make repairs with a direct view of the tendons and muscles of the rotator cuff

Making more space

Impingement or calcium deposits can be treated by debridement (removal of damaged tissue). The surgeon may take out an inflamed bursa and/or trim the acromion to make more space for the joint. Calcium deposits can also be removed, if needed.



Tendon trim and repair

If you have a torn rotator cuff tendon, the surgeon will debride the end of the damaged tendon. The tendon will be reattached to the humerus with anchors, tacks or sutures (stitches). These remain in place and don't need to be removed.

Helping your shoulder heal

In the hours right after your rotator cuff surgery, the surgeon or nursing staff will check your shoulder. You will be given medication to relieve pain if you need it. You will be made to go home that day, or stay in the hospital or surgery center overnight. As your shoulder heals from surgery, you can work with your healthcare team to begin the process of regaining shoulder strength and flexibility.

Keeping the shoulder moving

Right after surgery, you may be told to use cold packs and a sling. Soon, though, your doctor or physical therapist will have you gently move your shoulder to prevent stiffness and swelling. A rehabilitation (rehab) program will likely be prescribed to help restore your shoulder's range of motion. Initially, gentle use of your shoulder can be quite helpful. Talk to your surgeon and physical therapist about what kind of movements are safe for you.

During recovery

After surgery, you will need to protect your healing shoulder. Depending on what kind of surgery you had, you may be asked not to use your shoulder at all, until cleared to do so. Once your shoulder has healed enough to begin gentle movement, be sure to follow all instructions from your healthcare team carefully.

When to call your doctor?

Call your doctor if you notice any of these things after surgery:

- Increased pain or swelling at the incision site
- Drainage from the incision
- Numbness of the shoulder or arm that gets worse, not better
- Increased redness at the incision site
- Bleeding from the incision
- Fever over 101 °F (38.3 °C)

Your physical therapist will show you which exercises are appropriate and how to do them safely.





Follow-up with your doctors

While your rotator cuff is healing after surgery, your doctor will need to check your shoulder. This is to see if shoulder mobility and functions are returning properly. Your treatment plan might be changed or adjusted to improve your recovery.



A shoulder that's fit for life

Whether or not you have had surgery, you can work to keep your shoulder healthy and strong. Before using your shoulder, stretch and warm up. This will help prevent further injury and keep you feeling your best. Talk to your healthcare provider about the right kinds of warm-ups to do before any sports or other strenuous activities.

Be sure to perform adequate stretching exercises before playing sports or using your shoulder at work.



Your surgical checklist

Use this checklist to remind you what to do before and after surgery. Ask your healthcare provider to fill in the blanks. Your surgeon can also write down any special instructions.

Before surgery

- ❏ Tell your doctor what medications, supplements and herbal remedies you take. Ask if you should stop taking any of them before surgery
- ❏ Confirm the time you should arrive at the hospital or surgery center. Arrange for an adult family member or friend to give you a ride to and from surgery
- ❏ Don't eat or drink anything after midnight, the night before your surgery

After surgery

- ❏ Use ice as instructed to reduce swelling and pain
- ❏ Take care of your incisions as directed. You can begin bathing on doctor's advice
- ❏ See your doctor for a follow up visit
- ❏ Wear your sling as directed
- ❏ Do physical therapy exercises as prescribed
- ❏ Ask your doctor what activities you should avoid while you heal



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