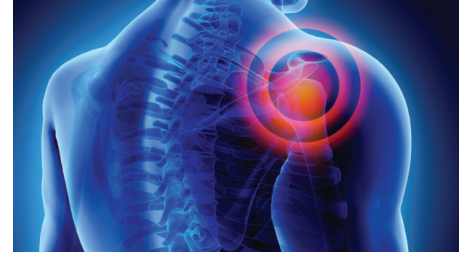


# Rotator Cuff Tears: Surgical Treatment



Rotator cuff repair is generally recommended when non-operative treatment has failed. Surgery may also be indicated when:

- Symptoms have persisted for minimum of 3 months despite adequate physician-guided therapy
- There is significant weakness or loss of function of the shoulder
- The tear is larger and the surrounding tendon and muscle is of good quality
- The tear is acute (happened as a result of a significant injury or trauma)

## Surgical Treatment Options

Rotator cuff repair usually involves the reattachment of the torn tendon back to the humerus. The type of surgery performed depends on both patient and surgeon-specific factors, which may include:

**Debridement** – In some cases, only mild fraying of the rotator cuff is identified at the time of surgery. When this fraying is less than 50% of the thickness of the tendon, it is often treated with a debridement, where the frayed edges are smoothed using special instruments, which in turn allows the tendon to heal. This can provide a relief of the symptoms associated with the partially torn rotator cuff.

**Open Repair** – An open repair, which was the first type of repair described to fix a torn rotator cuff, involves a larger incision over the shoulder with detachment of the deltoid muscle from bone so that the tear may be seen. Removal of bone spurs, known as an acromioplasty, may be done prior to the repair being performed. The torn tendon is directly visualized and repaired with sutures, suture anchors or both, directly to the bone on the head of the humerus. Following the rotator cuff repair, the deltoid is repaired back to the acromion, before closing the skin. Although technology has allowed for less invasive methods for repairing the rotator cuff, an open rotator cuff repair is still an effective technique for repairing a torn rotator cuff.

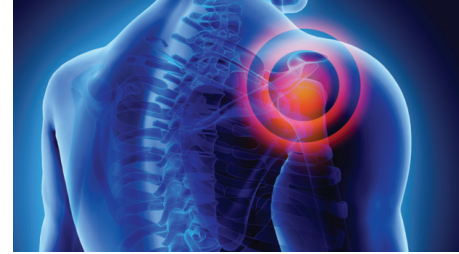
**Mini-Open Repair** – A mini-open repair involves the use of the arthroscope, or special camera, to perform the acromioplasty and assess the inside of the shoulder joint. The advantage to the use of the arthroscope is better visualization of all of the structures inside the shoulder, which may allow your surgeon to carry out additional procedures that may be felt to be beneficial. Your surgeon can also identify and mark the site of the rotator cuff tear. Following completion of the arthroscopy and any additional procedures, the camera is removed, and a smaller open incision is made over the shoulder. The deltoid muscle is then split instead of being detached, and the torn tendon is visualized directly. The repair is then carried out in a similar fashion to an open repair. The deltoid split is then closed before closing the skin.

**Arthroscopic Repair** – An arthroscopic repair is performed without the need for an open skin incision or a split of the deltoid. In addition to the arthroscope, or special camera, instruments designed for use with the arthroscope are inserted through small incisions, or portals, in the skin. Your surgeon uses these special instruments to help free up the rotator cuff tear and to repair it as previously described. Your surgeon can also perform additional procedures as needed based on what is seen at the time of surgery. The major advantage of an arthroscopic repair may be your surgeon's ability to see and free up the torn rotator cuff prior to performing the repair.

## Additional Procedures

Additional procedures can be performed at the same time as the repair, which depend in part on what else is found at the time of surgery. In many cases, your surgeon will have explained these additional procedures to you prior to your surgery, but on occasion such additional findings are corrected simultaneously in order to provide the best results.

# Rotator Cuff Tears: Surgical Treatment



**Bursectomy and Acromioplasty** – Bursectomy is the most commonly performed additional procedure performed with a rotator cuff repair. A bursectomy removes the sac that exists between the rotator cuff and deltoid muscle and commonly becomes inflamed and painful when the rotator cuff is torn. An acromioplasty removes the bone spurs and the calcified ligament that forms part of the arch over top of the rotator cuff, which may contact the rotator cuff tendons and contribute to the formation of a tear. Both procedures may be done open or arthroscopically.

**Biceps Tenotomy or Tenodesis** – The long head of the biceps tendon originates from the top of the glenoid, or socket of the shoulder. It passes between the subscapularis (the tendon at the front of the shoulder) and the supraspinatus (the tendon at the top of the shoulder). It passes through a space known as the rotator interval. In some cases, the long head of the biceps tendon can become thickened or partially torn, which may contribute to the shoulder symptoms you are experiencing. Tenotomy is the term used to describe a release of the tendon whereas tenodesis refers to release and reattachment of the tendon on the humerus below the shoulder joint. There are risks and benefits to both a tenotomy and a tenodesis, which your surgeon may discuss with you.

**Distal Clavicle Excision or Acromioclavicular Joint Arthroplasty** – In some cases, the joint between the collarbone and shoulder blade, known as the acromioclavicular or AC joint, develops arthritis. This can sometimes cause symptoms, in addition to the symptoms caused by the rotator cuff tear. Your surgeon may have examined your AC joint or carried out an injection prior to surgery to determine if any arthritis is contributing to your symptoms. In cases where it is felt the AC joint is causing symptoms, the end of the collarbone may be removed or smoothed, either through an open incision or arthroscopically, at the time of the rotator cuff repair.

## Anaesthesia

In order for your surgeon to carry out a rotator cuff repair, you must have an anaesthetic performed at the time of surgery. The anaesthetic may involve you going to sleep, known as a general anaesthetic, or may involve having your shoulder and arm frozen, known as a regional anaesthetic or block, or both. A regional anaesthetic or block involves temporarily freezing the nerves that sense pain and may provide up to 8 hours or longer of pain control following surgery. It may include either a single injection that can last 12 to 24 hours, or the placement of a catheter that allows for the addition of more anaesthetic after your surgery is completed. Your surgeon and your anaesthetist will decide with you the best type of anaesthetic based on the type of surgery being performed, your medical history, and the experience and preference of your surgeon and anaesthetist.

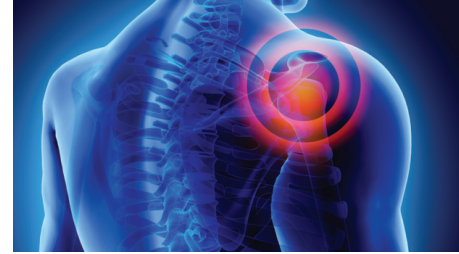
## Recovery

### Pain

Every patient experiences pain differently. The amount of pain that you may experience depends on the type of surgery performed and how you react to surgery. After surgery you will receive a prescription for pain medication that will be tailored to you based on the type of surgery performed, your medical history and any allergies you may have. You may also receive a regional anaesthetic or block, which is administered by the anaesthetist prior to your surgery. If a regional block is available, this will be discussed with you prior to surgery. Cooling the surgical site may also provide pain relief following surgery. Both ice packs and a cold therapy system may be used. If ice is being used it should never be applied directly to the skin and should be used on an intermittent basis (15 to 30 minutes of each hour).



# Rotator Cuff Tears: Surgical Treatment



## Stay in Hospital

Rotator cuff repairs are most commonly done as day surgery procedures that do not require an overnight stay in the hospital. In some cases, for either medical or social reasons, you may stay overnight one night. Your surgeon and anaesthetist will decide what the best choice is for you depending on your own personal history and the type of surgery being performed.

## Rehabilitation or Therapy

Rehabilitation following rotator cuff surgery is a crucial part of ensuring a successful recovery. It generally takes 6 months or longer, and is most commonly done under the supervision of a therapist. Rehabilitation after a rotator cuff repair is generally divided in three phases, the protective phase, the recovery of motion phase, and the recovery of function phase.

**Protective Phase** – The first phase of recovery allows the tendon to undergo the initial healing to bone. The shoulder may be protected in a sling for up to 6 weeks, and there may be restrictions on the use of the shoulder. Some activities may be allowed, depending on the severity of the tear, but are generally restricted to activities that can be done without pain. You will be taught how to begin strengthening the muscles around the shoulder blade, as these muscles are very important as they provide a foundation for further shoulder motion and function.

**Recovery of Motion Phase** – After the first 4 to 6 weeks, you will be allowed to begin more active movement of the shoulder and arm. Movement of the shoulder and arm begins passively, or with assistance, as this helps to protect the repair. As healing progresses, more active motion is introduced in addition to further strengthening of the shoulder blade muscles.

**Recovery of Function Phase** – After the movement of the shoulder and arm is restored, strengthening of the rotator cuff muscles can begin. This usually begins around 12 weeks after surgery, but does require that shoulder motion is restored and the shoulder muscles are functioning normally. Your therapist will teach you exercises that allow you to regain the strength and function in your shoulder and arm.

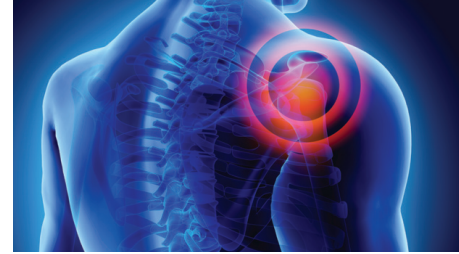
Complete recovery can take up to 6 to 12 months following surgery, depending on the severity of the initial tear and the quality of the surrounding tissues and muscles. Most patients have adequate strength and function to perform activities of daily living after 4 to 6 months, but it can often take a year or longer to restore shoulder function. Patients with severe injuries may not regain complete function despite a complete rotator cuff repair.

## Results

The majority of patients undergoing surgery for a torn rotator cuff experience a decrease in pain and an improvement in shoulder function. The different repair techniques have been all shown to improve outcomes, and the result after surgery is more dependent on the expertise of the surgeon and therapist than the technique chosen to repair the rotator cuff.



# Rotator Cuff Tears: Surgical Treatment



Some patients do experience residual pain and an incomplete recovery of function despite surgery. Factors that can negatively affect the results of surgery may include:

- Large and massive rotator cuff tears
- Poor quality bone, tendon, and muscle tissue
- Patient age greater than 65
- Smoking and the use of other nicotine products
- Medical conditions such as diabetes
- Poor compliance with rehabilitation following surgery
- Workers' Compensation claims

## Surgical Complications

Although rotator cuff repair is generally a safe surgery, any surgical procedure can have serious complications. These may include:

**Stiffness** – Stiffness can occur because of prolonged immobilization or due to secondary inflammation. In most patients, stiffness improves over time, even out to a year following surgery.

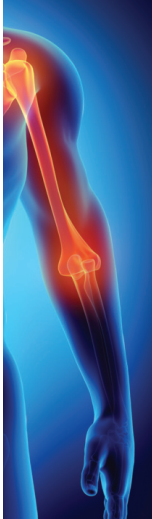
**Anaesthetic Complications** – Anaesthetic complications can be very serious. Your anaesthetist will review the risks of the anaesthetic with you.

**Stroke** – Most shoulder surgery is performed with you in an upright, sitting position. Because your head is above your heart in this position, during surgery this can result in decreased blood flow to your brain, which can lead to a stroke. This is extremely rare, but can occur.

**Incomplete Tendon Healing** – Despite a successful repair, some tendons do not go on to heal back to the bone. If this occurs, the sutures and anchors used to repair the tendon may fail, leading to a recurrence of the rotator cuff tear. Although incomplete tendon healing may occur, these patients often see a reduction in pain and an improvement in function despite the presence of a persistent tear.

**Nerve Injury** – Most nerve injuries are temporary, and improve with time. In rare cases, nerve injury can be permanent. The most commonly injured nerve is the axillary nerve which supplies the deltoid muscle.

**Blood Loss** – Although rare, blood loss during surgery requiring a blood transfusion may occur.



**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.whenithurtstomove.org](http://www.whenithurtstomove.org) to download your free copy.