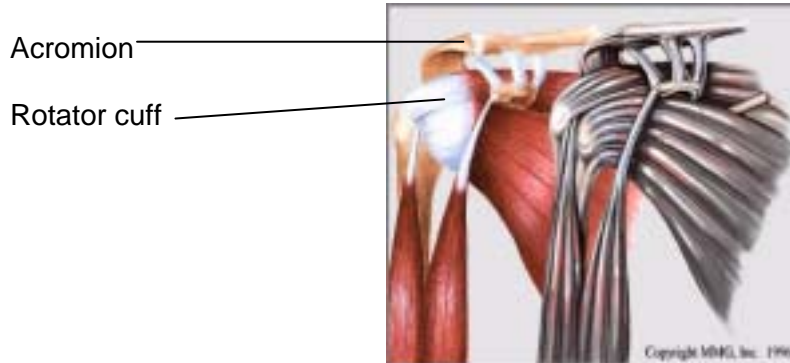


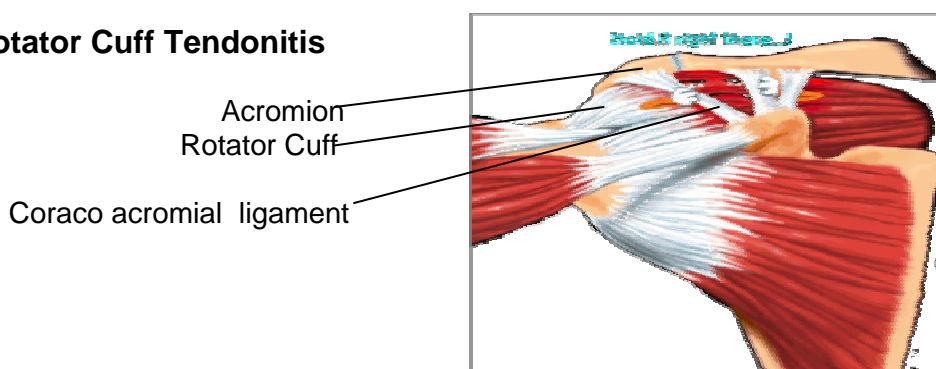
# Rotator Cuff Tendonitis and Rotator Cuff Tears

## Anatomy



The shoulder joint is made up of three bones: the scapula (shoulder blade), the humerus (upper arm bone), and the clavicle (collar bone). The tendons of four muscles form the rotator cuff. The muscles are called the supraspinatus, infraspinatus, teres minor and subscapularis. Tendons attach muscles to bones. Muscles are able to move bones by pulling on these tendons. This large tendon, called the rotator cuff, connects the humerus with the scapula (shoulder blade) and helps raise and rotate the arm. As the arm is raised, the rotator cuff also keeps the humerus tightly in the socket (glenoid) of the scapula. The part of the scapula that makes up the roof of the shoulder is called the acromion. Between the acromion and the rotator cuff tendons, there is a bursa. There are many bursae all over the body where tissues must move against one another. The bursa is a lubricated sac of tissue that protects the muscles and tendons as they move against one another. The bursa simply allows the moving parts to slide against one another without too much friction.

## Rotator Cuff Tendonitis



Usually there is enough room between the acromion and the rotator cuff so that the tendons slide easily underneath the acromion as the arm is raised. But each time the arm is raised, there is a bit of rubbing on the tendons and the bursa between the tendons and the acromion. This rubbing, or pinching action, is called impingement. Impingement occurs to some degree in everyone's shoulder, caused by day to day activities that we do using the arm above the level of the shoulder. Continuously

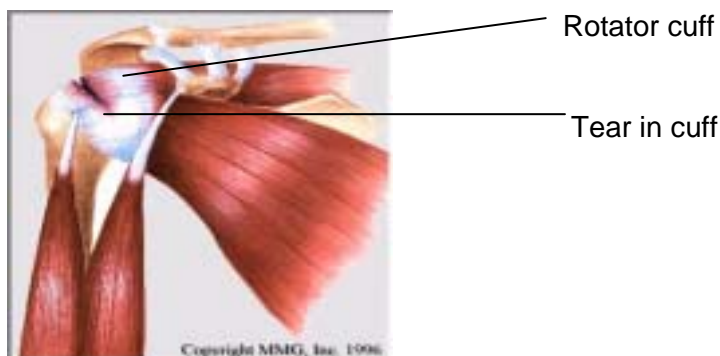
working with the arms raised over-head, repeating throwing activities, or other repetitive actions of the arm can cause impingement to become a problem. Raising the arm tends to force the humerus against the edge of the front of the acromion. With overuse, this can cause irritation and swelling of the bursa. If any condition decreases the amount of space between the acromion and the rotator cuff tendons, the impingement process may get worse. Bone spurs can further reduce the space available for the bursa and tendons to move under the acromion. Wear and tear of the joint between the collar bone and the scapula, the acromioclavicular (ac) joint, is a fairly common cause of bone spurs around this joint. This joint sits right above the bursa and rotator cuff tendons and if bone spurs develop underneath the joint, this can make impingement worse.

The diagnosis of impingement and bursitis is usually made on the basis of the history and physical examination. X-rays may be ordered in order to look at the type of acromion present and also for bone spurs emanating from the acromioclavicular (ac) joint. An MRI scan or arthrogram may be performed if there is a suspected tear of the rotator cuff tendons. If a tear of the rotator cuff tendon is not suspected, an ultrasound scan may be used instead of these investigations. On occasions an injection of local anaesthetic into the bursa can be used to determine whether in fact the pain is coming from the shoulder and not from some other structure about the shoulder.

The initial management of tendonitis is non-operative and includes rest, ice, anti-inflammatory medication and physical therapy in order to maintain the strength of the muscles of the rotator cuff. A series of cortisone injections into the subacromial bursa may be beneficial in reducing the swelling of the rotator cuff and bursa in order to allow the tendon to easily pass beneath the acromion.

Surgery in order to relieve the constant rubbing of impingement is not uncommon and when surgery becomes necessary the major goal of the surgery is to increase the space between the acromion and the rotator cuff tendons. Bone is generally removed from the acromion and also on occasions from beneath the acromioclavicular (ac) joint. On occasions also if the acromioclavicular joint is arthritic the end of the clavicle may need to be removed as well.

### **Rotator cuff tear**



The rotator cuff tendons have areas where there is very poor blood supply. In these areas of poor blood supply, tissues that are damaged do not heal as quickly as they

would do if the blood supply was improved. These areas of poor blood supply in the tendon make the rotator cuff tendons especially vulnerable to degeneration with aging. Rotator cuff tears usually occur through areas of the tendon that were not normal to begin with and have been weakened by degeneration and impingement. The weakened tendons can be injured and torn by an excessive force such as trying to catch a falling heavy object, or lifting an extremely heavy object with the arm extended. This can occur even in a young person. Typically though, a rotator cuff tear occurs in a late middle age person who has been having problems with the shoulder for some time before the acute event.

Rotator cuff tears cause two main problems - pain and weakness. In some cases a rotator cuff tear may be only a partial tear of the tendons, and you may have pain but can continue to move the arm in a normal range of motion. In other cases a complete rupture of the tendons occurs and you are unable to move the arm in a normal range of motion. A complete rotator cuff tear usually results in an inability to raise the arm away from the side under your own power.

A physical examination may be very suggestive of rotator cuff tear though your doctor may require other investigations such as an ultrasound, arthrogram or MRI scan. Initial management of a suspected rotator cuff tear is rest and anti-inflammatory medication mainly to control pain. Whilst a true rotator cuff tear will not heal, some partial tears will become very tolerable and may not require a surgical repair. As soon as pain tolerance permits, physical therapy to regain motion is begun.

A cortisone injection may be suggested if you are still having pain after several weeks of conservative care. Surgery to repair a tear in the rotator cuff tendons is usually necessary if there is a complete tear of the tendons resulting in an inability to raise the arm. Repairing the tendons can be difficult. The surgery is usually performed through a 4-5 inch incision on the side of the shoulder. In most cases repairing the tendons involves first removing any degenerative rotator cuff tissue that does not appear healthy. Then an area of the humerus (the upper bone) where the tendon was torn from is prepared for reattachment of the tendon. The soft tissue is removed on an area of the humerus to form a raw bony area for attachment of the torn tendon. The tendons heal to bone over time and reattaches itself.

Physical therapy is begun fairly soon after surgery though the repair must be protected mainly to keep the sutures from pulling free. The recovery period after rotator cuff surgery is necessarily prolonged and it is not uncommon for patients to still be improving after 12 months.

## **Complications**

Surgery to the shoulder for impingement or repair of rotator cuffs is often associated with a prolonged period of recovery. The initial post-operative pain can be quite severe and it is common for patients to complain of difficulty with sleeping. The decision to have surgery will not be entered into lightly and a "quick fix" should not be expected. The commonest complication is post-operative stiffness in the shoulder mainly due to a "capsulitis" which is related to damage to the covering of the joint which is unavoidable. This can take a lot of physical therapy to overcome. With

repairs of the rotator cuff it is common that the shoulder does not return to “normal” and the quality of the repair is largely determined by the quality of the tendons which present themselves at surgery. With the older patient the tendons are often degenerate and repair in these circumstances may be less than satisfactory.

Other complications that can occur with shoulder surgery include infection which may require secondary surgery. An injury to the nerves that pass in the region of the shoulder is uncommon though is possible resulting in temporary or permanent numbness of the arm or hand. A vessel injury is equally uncommon. An injury to a vessel would require secondary surgery.