

Current Concepts in the Treatment of Rotator Cuff Disease

More adults staying active and working longer before retiring can mean a greater risk of rotator cuff (RTC) disease and tears. Improved technology and surgical tools have led to an increased number of rotator cuff surgeries being done arthroscopically. This article was written in order to help surgeons keep up with all the changes.

The four tendons of the rotator cuff attach to the deep rotator cuff muscles. This group of muscles lies just outside the shoulder joint. These muscles help raise the arm from the side and rotate the shoulder in all directions. They are involved in many day-to-day activities. The rotator cuff muscles and tendons also help keep the shoulder joint stable by holding the humeral head in the glenoid socket.

Degenerative changes due to the aging process are the most common cause of rotator cuff tears in older adults. Studies show that once the rotator cuff starts to tear, the tear will continue to get worse and increase in size over time. These tears are divided into two basic groups based on severity: partial-thickness and full-thickness tears. As the names suggest, how far down the tear goes through the tissues determines the category.

It's possible to have a rotator cuff tear without pain. But most acute and chronic tears that get worse tend to cause pain and loss of motion. It's only a matter of time before weakness develops and then loss of function when trying to perform daily tasks.

The tendon tries to heal itself but often ends up just filling in the gap caused by the tear. Fat cells form the filler, but these are not structurally strong. This in-fill process is called fatty infiltration. Fatty infiltration does not improve shoulder motion, strength, or function.

Surgery may be needed but before subjecting patients to this type of invasive procedure, conservative (nonoperative) care is usually recommended first. Temporarily delaying surgical repair in favor of Physical Therapy does not seem to put the patient back in any way.

The therapist assists each patient by creating an individualized treatment program that addresses posture and alignment factors first. Then restoring motion and strength are next. The therapist always keeps the patient's goal, activity level, lifestyle, and general health in mind. For those individuals who are still out in the work force, specific work requirements are determined as well.

Patients who either have failed to improve with conservative care or who have massive tears unlikely to respond to a nonoperative approach, may need surgery. Here's where the surgeon must make some key decisions that require keeping up with current evidence-based research results.

For example, results are improved with partial tears if the surgeon cuts through the remaining tendon and makes a full-thickness repair (instead of sewing the torn tendon back together). Surgeons are also taking a closer look at which side of the tendon the tear is located (top next to the bursa or bottom next to the joint). Treatment can be more aggressive with bursal-sided tears (e.g., debridement, repair of tendon, and decompression). Decompression refers to shaving or cutting away bone that might be pressing against the tendon.

Sometimes the surgical approach taken depends on which of the rotator cuff tendons has been torn. Another deciding factor is whether the tear is closer to the tendon-bone interface or closer to the tendon-muscle connection.

Some muscles work together so closely with other muscles (such as the subscapularis and biceps tendon match) that a tear in one requires treatment of both. Full-thickness rotator cuff tears almost always involve both the infraspinatus and supraspinatus muscles.

In the case of full-thickness tears (tears that go all the way through the tissue), the surgeon then looks to see how far back the tendon has retracted (pulled back away from the bone). Here it will be necessary to decide on the best surgical technique to use to make the repair (e.g., single-row versus double or dual-row sutures, use of suture-bridging techniques).

Newer concepts in rotator cuff surgery include biologic augmentation of the repair. Graft material (either from a harvested tendon or grown in the lab from donor cells) is used to improve healing and support the repair site. Studies support the use of autografts (tissue taken from the patient) over allografts (donor tissue from another person) for the best results.

The final factor for consideration with today's modern arthroscopic rotator cuff repairs is the area of complications that arise after surgery. Shoulder stiffness is no longer much of a problem with arthroscopic procedures. Instead, infection and nerve injury top the list of potential problems. The newer approach of using an intra-articular (inside the joint) pain pump is losing favor due to high levels of chondrolysis (destruction of joint surface).

In summary, surgical treatment of rotator cuff tears is performed arthroscopically more often than not. With an increased number of older adults suffering rotator cuff tears, rotator cuff disease has become a focus of research and attention. Surgeons who want to review the most current concepts for the treatment of rotator cuff tears will find this article informative and up-to-date.

Reference: Claudius D. Jarrett, MD, and Christopher C. Schmidt, MD. In *The Journal of Hand Surgery*. September 2011. Vol. 36A. No. 9. Pp. 1541-1552.