

Factors Affecting Rotator Cuff Healing

A review of current literature identified positive and negative factors regarding rotator cuff repair healing. Negative healing factors include larger tears, excessive fatty tissue in the repair, muscle atrophy (or lack of muscle mass), and older age due to a poor healing environment. Factors that do not affect healing outcomes are the type of surgical technique used or the use of platelet-rich plasma. Evidence is conflicting for the type of rehabilitative postoperative protocol used.

The shoulder joint is a complex joint, which consists of your arm bone (humerus), collarbone, and shoulder blade. These three bones are linked together via ligaments, tendons, and a thick fibrous capsule. The amount of boney congruency is likened to a golf ball (the head of the humerus) on a tee (the scapula). This lack of bony contact allows us to move our arms in a circle but at the same time sacrifices joint stability. Instead of relying on bone to help hold the joint together, the shoulder joint must rely on six “rotator cuff” muscles and tendons as well as a capsule surrounding the joint made up of thick fibrous tissue.

The authors point out that rotator cuff repair studies often focus on patient functional outcomes versus actual healing and that these two factors do not always go hand in hand. Functional outcomes, or the return to doing what you want to do, are often measured by questionnaires. Pain, motion, and strength are also considered in gauging effectiveness of surgery. The actual tendon healing, however, is often overlooked. The amount of tendon healing can be seen with imaging, such as an MRI.

The extent of the tendon healing depends on numerous factors. The proper surgical technique is debated among surgeons. Incision type can be either open (large incision) or arthroscopic (small incision). Because this review simply looked at the tendon healing, it found that there was no difference between the two. Surgeons have the option to perform either a single row stitch or a double row stitch on the tendon for the repair, depending on the type and size of the tear. The failure rate for a single row stitch is slightly higher than that of a double row stitch, but the data is considered “not statistically significant,” meaning that there might be some factors unaccounted for that may make these numbers misleading. Tying knots or not tying knots in the stitch is yet another technique controversy that goes unanswered with regard to tendon healing. Another review did find unknotted sutures to be slightly more beneficial from a shoulder movement standpoint. Suture anchors, or the piece of material that holds the suture to the bone, have yet to be examined for their contribution to tendon healing. The preparation of the bone for the anchor attachment is also a factor and some worry that it can interfere with the anchor integrity in bones that are osteoporotic, or brittle. Studies show that there is slightly better healing with a “microfracture” technique (tiny holes are poked in the bone to encourage healing), than the standard procedure. Platelet-rich plasma (PRP), or blood components thought to speed up healing, is sometimes injected at the site of the repair. Multiple studies show no benefit of this towards healing and that it can actually increase the chance of infection.

Often in a shoulder that has difficulty with stability, an extra piece of bone builds up on part of the shoulder blade, called an acromial bone spur. Sometimes this spur is removed during the rotator cuff repair. Authors found that whether or not the spur is removed during the rotator cuff surgery healing of the rotator cuff is not affected. Likewise, a person’s anatomy can predispose them to a rotator cuff problem and surgeons can “fix” these by changing the direction of the pull of the tendons with an “augmentation patch.” However, at this time evidence is controversial whether or not they help with the healing process for rotator cuff repair, with the bulk of the evidence suggesting not using them.

Surgical techniques aside, there have varying opinions on what rehabilitative protocol, or recipe, to use following surgery. Two common camps are early movement after surgery versus delayed movement but there is no great evidence to support faster healing times with either. There are several patient factors that

significantly affect healing time, including increase in age, the size and location of the tear, the quality of the tissue, how long prior to surgery the tear occurred, and the presence of osteoporosis and diabetes.

Overall, rotator cuff healing is affected by a number of variables. The exact combination of factors has yet to be determined. The authors point out as well that readers should keep in mind that there are factors that are unaccounted for in this review such as pain levels, outcomes, speed and ease of procedure and postoperative complications.

Reference: Nathan A. Mall, M.D., et all. Current Concepts Review: Factors Affecting Rotator Cuff Healing. In *The Journal of Bone and Joint Surgery*. May 2014. Vol. 96A. Pp 778-784.