

Reasons For Failed Rotator Cuff Tear Healing After Surgery

Surgeons around the world are trying to solve the mystery of rotator cuff tear failure after surgical repair. In this study, researchers at the Seoul National University College of Medicine in Korea join the search.

Multiple studies have shown that the failure rate after rotator cuff repair ranges from 20 to 94 per cent. Although there are many potential risk factors, the authors of this study were looking for prognostic factors. Prognostic factors are patient characteristics that when present predict a failed result.

In order to pinpoint the specific prognostic factors, the authors cast a wide net so-to-speak. In other words, they analyzed the effects on results of many variables including patient age, sex (male versus female), symptom duration, size of the tear, smoking, and repair technique used.

They also considered the amount of fat that had filled in the tear as a possible risk factor. This attempt at healing is called fatty infiltration. Presence of other medical problems such as diabetes, high blood pressure, osteoporosis, and heart disease were assessed as prognostic factors as well.

After examining the medical records of 272 patients who had a rotator cuff repair, there were three significant prognostic factors for failed healing: 1) low bone mineral density (BMD), 2) fatty infiltration, and 3) tendon retraction. Let's take a look at each of these predictors and see what clinical implications there are. Low bone mineral density (BMD) is the hallmark finding in osteoporosis (brittle bones).

Without good, solid bone structure, the suture anchors used in the repair loosen and pull out before tendon healing occurs. Suture anchors are used to reattach the torn tendon to the bone. Statistical analysis showed that patients with low bone mineral density had 7.25 times more chance of failed rotator cuff tear surgery compared with patients who had normal bone.

The second prognostic factor (fatty infiltration) was found to be an independent risk factor for failed rotator cuff repairs. Patients with higher amounts of fatty infiltration were more likely to have unhealed responses. Of the four tendons that make up the rotator cuff, fatty infiltration of the infraspinatus tendon was the most significant prognostic factor.

The third and final factor was tendon retraction. The further the tendon pulls away from the bone, the greater the risk of tendon repair failure. There isn't anything the patient can do to change fatty infiltration or tendon retraction. The surgeon can use specific surgical techniques to work with the soft tissues for the best results.

The real benefit of this study was in recognizing the role of osteoporosis in rotator cuff tear healing. By measuring bone mineral density before surgery, patients at increased risk for failed tendon healing can be identified. With careful management of low bone mineral density it may be possible to improve the healing rate of surgically repaired rotator cuff tears.

How can this be done? Patients can decrease use of tobacco and alcohol while increasing their calcium and vitamin D intake. Proper exercise and medications (e.g., hormone therapy) are also known to increase bone mineral density level. Since osteoporosis and rotator cuff tears are both common in older adults (especially postmenopausal women), efforts must continue to educate everyone of the importance of osteoporosis prevention.

In this way, the success of tendon healing may be improved. Further studies are needed to verify the possible cause and effect of osteoporosis prevention with improved rotator cuff tear healing rates (and reduced failure

rates after rotator cuff repair surgery). The authors suggest a well-organized, randomized study to confirm the link between bone mineral density and tendon healing.

Reference: Seok Won Chung, MD, et al. Factors Affecting Rotator Cuff Healing After Arthroscopic Repair. In *The American Journal of Arthroscopic Repair*. October 2011. Vol. 39. No. 10. Pp. 2099-2107.