Diagnosis and management of rotator cuff tears are controversial. The incidence of rotator cuff tears increases with age: 25% of the population older than 60 years present rotator cuff tears on imaging, but only 5% to 40% are symptomatic. By age 80 years, 50% of patients have evidence of rotator cuff tears on imaging. The main risk factors predisposing to rotator cuff tears are smoking, hypercholesterolemia, genetics, creatinine, and age.

Rotator cuff tears do not heal spontaneously, and a small tear, left untreated, may increase in size. Partial tears may become full-thickness lesions, and asymptomatic patients may become symptomatic. The time course of this evolution is unknown, although these changes occur, on average, within 3 years of symptoms appearing. Some degenerative changes, mainly those occurring at the muscle-tendon unit, may be at the root of this. Fatty infiltration of the muscle(s) involved is irreversible: even when a rotator cuff tear is repaired, fatty infiltration of muscle impairs the functional results of the repair.

The first line of management is conservative; surgery is indicated for symptomatic patients unresponsive to conservative measures, especially when function and quality of life are compromised. Although surgery can be effective, postoperative outcomes are negatively influenced by the status of tear progression, the amount of degenerative fatty infiltration of the muscles, and the atrophy of the muscle itself. Age is not necessarily a contraindication to repair: good and excellent results have been observed in patients older than 65 and 70 years.

Arthroscopy produces excellent outcomes, allowing small to large tears to be repaired with lower morbidity and complication rates compared with open traditional procedures, but mini-open repairs are a safe alternative to arthroscopic-assisted repairs. The single-row technique described by Brady et al does not allow complete coverage of the footprint to be obtained; the Mason Allen stitch configuration is more advantageous in this situation. Double-row and transosseous sutures are more favorable for covering the footprint. However, the biomechanical advantage of an increased coverage is only theoretical because clinical and functional outcomes of such suture configurations are comparable.

Although the suture materials are strong and the coverage area at the footprint can be adequate, the healing process of the rotator cuff tendons at the insertion site is often only partial. In patients with overuse rotator cuff tendinopathy, the pathological changes extend to the whole rotator cuff; some fibrovascular scar tissue and adherences make the tendon weak at the tendon-bone interface. At power Doppler, the repaired tendons are poorly vascularized; up to 3 months postoperatively, the vascularization comes from surrounding tissue, including the bursa and the attachment site of the anchor.

Platelet-rich plasma (PRP), a relatively recent product, is supposed to accelerate and improve the healing process. However, the clinical results and retear rates after repair and application of PRP are equivalent to those of simple repair and no augmentation with PRP, with Level I studies showing that the application of PRP exerts no influence on the rate of rotator cuff tear healing and retearing. The use of mesenchymal stem cells may also enhance the healing process of rotator cuff tendons, having a greater response when insulin is administered.
Simpler methods may be used. For example, microfracturing the bone at the footprint may produce growth factors at the tendon-bone interface to stimulate tendon healing and improve clinical outcomes in the short term. However, these favorable short-term outcomes need to be confirmed on imaging and tested in patients with large tears.\(^5\)

The amount of matrix metalloproteases increases after tearing and retearing of the rotator cuff; their inhibitors could be used to reduce the remodelling process observed after rupture.\(^6\) Smoking is likely to hamper the healing process, resulting in an increased retear rate.

Arthroscopic repair is successful in 85% to 90% of cases, but retear, gap formation, and nonhealing may occur in 50% of cases, especially in older patients with large tears.\(^7\) Retears and impaired healing of rotator cuff tears are expected in a relatively consistent percentage of patients undergoing arthroscopic rotator cuff repair, depending on the type of lesion, patients’ risk factors, and surgeon experience. However, retearing and impaired healing of rotator cuff tears are not necessarily associated with recurrence of pain. Indeed, a return rotator cuff tears may be associated with relief of pain, functional recovery, and overall benefit.\(^2\)

Therefore, a retear should not necessarily be considered a failure, especially when a degenerative, large rotator cuff tear is being repaired, given the improvements in the patient’s health status and quality of life.\(^3\) Given the discrepancy between clinical features and imaging findings, criteria are necessary to assess a surgical repair. The authors recommend examining the clinical and functional status of the patient using outcome instruments that assess the overall impairment of quality of life. Healing of the tendon on imaging should be considered more carefully for high-demand manual workers and overhead athletes, but failure on imaging does not necessarily translate to poor clinical and functional outcomes.

REFERENCES