

Editorial Commentary: Superior Capsular Reconstruction: Indications and Proper Technique Results in Good Outcomes but Reports of Complications



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Abstract: Superior capsular reconstruction is a minimally invasive option to treat massive irreparable rotator cuff tears. In the appropriately selected patient, available data suggest that while the procedure generally results in improved function, there is a not insignificant risk of complications. Moreover, the rate of complications is likely underestimated given that outcomes are typically published by those with significant technical expertise. The literature supports improved outcomes in patients without significant degenerative change (less than Hamada 3) along with an intact or repairable subscapularis. Graft failure is the most common complication, and appropriate graft selection (ideally at least 4 mm thick) and careful preparation are essential. Additionally, surgeons could consider 3 anchors on the glenoid to provide secure fixation and a double-row transosseous equivalent construct on the humerus. To prevent suture pullout or excessive tension on the graft, it is important to maintain a sufficient border of graft and measure the graft in 30° of forward elevation and 30° of abduction. Additional fixation with posterior side-to-side repair of the graft to the infraspinatus has been reported to improve biomechanical properties of the construct. Existing research is skewed toward low-level evidence at high risk of bias and the reported results of high-volume surgeons. High-quality pragmatic trials are required to truly understand the optimal indications and real-world outcomes of the superior capsular reconstruction.

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I read with great interest the article entitled “Complications of Superior Capsule Reconstruction for the treatment of Functionally Irreparable Rotator Cuff Tears: A Systematic Review” by Sommer, Wagner, Zhu, McRae, MacDonald, Ogborn and Woodmass.¹ The authors performed a comprehensive search of PubMed, Embase, and Medline databases evaluating the reported complications following superior capsular reconstruction (SCR) for irreparable rotator cuff tears. The results from entirely case series–level studies suggest not insignificant complication rates but generally improved postoperative functional outcomes in most cases.

Massive irreparable rotator cuff tears, particularly in the young patient, are a challenging clinical scenario for

the shoulder surgeon. Such tears often result in significant pain and functional limitations. Most concerning is the rate of failure following repair of massive rotator cuff tears, which is reported to range from 36% to 79%.² While a variety of treatment options are available, including reverse total shoulder replacement, SCR provides an attractive—although technically challenging—option for a minimally invasive joint and preserving technique. In an appropriately selected patient, the procedure results in significantly improved pain and function.

Enthusiasm for SCR has resulted in an exponential increase in research related to the field over the past decade.³ While the focus on critically evaluating a novel procedure is to be commended, the authors identify almost all available data as case series–level evidence. In general, given the significant risk of bias with case series design, such data are of limited use in guiding clinical practice. Similarly, a review performed by our group identified 95% of available literature on SCR of level 4 or 5 evidence, with most studies including fewer than 20 patients.³ Small sample sizes often result in

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inadequate power to detect statistically significant trends within the data. Additionally, an important point identified by the authors is that currently available data are primarily the results of high-volume shoulder surgeons. The rate of complications is thus likely underestimated given the outcomes are biased to those with significant technical expertise. As such, currently available literature should be used as hypothesis generating as opposed to providing definitive conclusions with respect to the true complication rates and outcomes following SCR. Encouragingly, there has been a recent increase toward higher-level research over the past 3 years with several ongoing randomized controlled trials.

Given the significant technical considerations with SCR, I have found patient selection and meticulous surgical technique to be critical in maximizing postoperative outcomes. The literature supports improved outcomes in patients without significant degenerative change (less than Hamada 3) along with an intact or repairable subscapularis. Given graft failure is the most common complication, appropriate graft selection and careful preparation are essential. Denard et al⁴ reported findings from a prospective case series of 59 patients with minimum 1-year follow-up identifying improved outcomes with thicker graft sizes—as such, I aim to utilize grafts of at least 4 mm in thickness. I generally use 3 anchors on the glenoid to provide secure fixation and a double-row transosseous equivalent construct on the humerus. In order to prevent suture pullout or excessive tension on the graft, it is important to maintain a sufficient border of graft and measure the graft in

30 degrees of forward elevation and 30 degrees of abduction. Additional fixation with posterior side-to-side repair of the graft to the infraspinatus has been demonstrated to improve biomechanical properties of the construct.⁵

It is important to continue to critically evaluate the SCR procedure as we move toward maximizing joint-preserving techniques. Future high-quality randomized controlled trials will help answer for us which patients will most reliably benefit from SCR and what the true complication profile is when compared to other available treatment options.

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