Editorial Commentary: Concomitant Surgical Management for Rotator Cuff Tears With Adhesive Capsulitis is an Effective Treatment for Managing a Vexing Problem

Albert Lin, M.D.

Abstract: Rotator cuff tears (RCT) with concomitant frozen shoulder is a challenging clinical scenario that I, along with many other shoulder surgeons, commonly encounter. Some controversy exists regarding the optimal treatment. Does one address the shoulder stiffness first and regain range of motion (ROM) via nonoperative or operative means, then treat the rotator cuff tear later, or should it all be done at the same time surgically via a concomitant arthroscopic capsular release with or without manipulation under anesthesia (MUA) followed by a rotator cuff repair (RCR) in the same setting? I believe there is overwhelming evidence in the literature to support the latter. Address both pathologies concomitantly through a single stage surgery! In the setting of the RCT with adhesive capsulitis, I routinely recommend early concomitant arthroscopic capsular release with gentle MUA and then perform an arthroscopic RCR in one stage. This is then followed by an accelerated postoperative protocol which is balanced with some protection for healing. We have reported excellent outcomes with this approach. Similarly, I have found this approach to be highly effective, reproducible, and efficient, with high patient satisfaction and outcomes comparable to my patients who undergo arthroscopic RCR without stiff shoulders.

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A rotator cuff repair (RCR) in some ways can be considered a shoulder tightening procedure, largely because the postoperative rehabilitation protocol de-emphasizes early range of motion (ROM) in order to allow healing of the repair. A vexing clinical scenario therefore is encountered when preoperative stiffness or adhesive capsulitis is also present in the setting of a rotator cuff tear (RCT). Physical therapy protocols for addressing frozen shoulder and postoperative protocols for RCR are essentially diametrically opposed. This conundrum leads some surgeons to advocate regaining range of motion before considering treatment for the RCT. This algorithm, I believe, is proposed due to a worry that performing a RCR in this setting can result in persistent postoperative stiffness, an entity which has been shown to result in significant morbidity.[1-3] However, based on the current literature, these concerns are likely unfounded. Multiple studies have demonstrated that concomitant surgical management for adhesive capsulitis — which includes manipulation under anesthesia (MUA) with or without capsular release — at the time of RCR is an effective treatment with objective and subjective outcomes that are equal to RCR alone in patients without preoperative stiffness.[4-10] Surgically treating the stiffness and the cuff tear simultaneously works.

The authors of the study entitled "Outcomes of Arthroscopic Rotator Cuff Repair in Stiff Shoulders are Comparable to Non-Stiff Shoulders When Combined With Manipulation Under Anesthesia," Zhang, Tan, and Lie,[11] should be commended on their excellent study. Their retrospective analysis of 123 patients with small and medium sized RCTs and minimum 2 year follow-up echoes multiple previous studies demonstrating the

University of Pittsburgh Medical Center.

The author reports the following potential conflicts of interest or sources of funding: A.L. is a paid consultant for Arthrex and Wright Medical. Full ICMJE author disclosure forms are available for this article online, as supplementary material.

0749-8063/201467/$36.00

https://doi.org/10.1016/j.arthro.2020.08.026

efficacy of concomitant surgical treatment of adhesive capsulitis and RCTs. They found no significant differences in outcomes scores or objective measures including ROM in patients with stiff shoulders who underwent MUA combined with arthroscopic RCR compared to patients with non-stiff shoulders who underwent arthroscopic RCR alone. Their findings are consistent with the existing body of literature on this subject, and while their findings are not necessarily new, provide additional support for early concomitant surgical management as an effective approach. Their approach, however, did not include a capsular release and while they did not find significant differences in ROM at 6 months between stiff and non-stiff groups, other studies have reported slower recovery with MUA alone compared to MUA with capsular release.[8,10] Because of this, my preferred approach is an arthroscopic capsular release, followed by a gentle MUA before proceeding into the subacromial space for the arthroscopic RCR. Furthermore, performing a capsular release prior to MUA decreases the risk of iatrogenic injury with MUA alone, including humeral fracture and further tearing of the rotator cuff.

Treating the adhesive capsulitis and RCT separately is not an optimal approach. Preoperative physical therapy or operative management to address frozen shoulder prior to proceeding forward with arthroscopic RCR—i.e., a two-stage approach—has not been shown to be more effective than a single stage approach.[9] In addition, two stage approaches may lead to needless delay in surgical intervention for several months during which RCT progression and other sequelae can theoretically occur. It is neither cost-effective nor efficient to subject a patient to multiple interventions. At the same time, there is no convincing evidence that postoperative stiffness following RCR can be prevented with this protocol. Indeed, patients with underlying rotator cuff tears with persistent pain and diminished active range of motion, can develop capsular contractures leading to diminished active and passive ROM.[8,12] This may be a "chicken or egg" scenario: does the rotator cuff tear cause secondary stiffness, or does the painful stiffness exacerbate the RCT? My own personal belief is that the cuff tear is probably the underlying issue that leads to the pathologic cascade of a frozen shoulder, and therefore, initial treatments targeting only the frozen shoulder may not be addressing the root cause. This may be one reason why concomitantly addressing both the adhesive capsulitis and RCT with surgery is a highly effective solution. Interestingly, the authors of the study also demonstrate that a higher percentage of patients in the stiff group reached MCID for the constant shoulder score compared to the non-stiff group, highlighting the level of preoperative dysfunction in the stiff group and the effectiveness of surgical management for this challenging cohort.

Lastly, one additional question bears mention. What is the optimal postoperative protocol in this setting? Much like the authors in the study, I approach these patients with a relatively accelerated rehabilitation protocol that introduces early range of motion, which is good for the frozen shoulder. But unlike the authors, I also balance this ROM with a higher degree of protection appropriate for RCR healing. My patients begin early pendulums, scapular mechanics, and passive motion under formal PT guidance on postoperative day number 1, but the arm is protected in a sling for approximately 4 weeks when not performing these exercises. Following this, a more standard protocol is initiated with active motion around 6 weeks and strengthening around 12 weeks. In my experience, ROM achieved postoperatively is similar to others reported in this setting.[8-10] I counsel my patients that their progress in ROM may lag behind their non-stiff counterparts until about the 3-6 months postoperative mark. While this is a short period of time for us surgeons, a 2-3 month difference can seem like an eternity for some patients. I believe it is important to set the expectation early that while they will get to the ultimate destination, it may take a few months longer. In truth, a little stiffness initially is probably protective for rotator cuff healing.[13,14] Is it possible that patients predisposed to adhesive capsulitis also have an increased propensity for a healing response? Whether or not this is the case, lower re-tear rates have been reported in the stiff versus non-stiff shoulder following RCR and that has been my own personal experience as well.[6,7]

In the setting of the RTC with adhesive capsulitis, I routinely recommend early concomitant arthroscopic capsular release with gentle MUA and then perform an arthroscopic RCR in one stage. An accelerated postoperative protocol is then implemented to initiate early passive ROM balanced with some protection for healing. I have found this approach to be highly effective and efficient, with high patient satisfaction, and have observed no clinical differences in range of motion or other outcomes measures compared to my patients with RCR who have no prior stiffness.

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