

Editorial Commentary: Rotator Cuff Repair: Graft Augmentation Provides Promising Clinical Outcomes



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Abstract: Rotator cuff repair has benefitted from many technologic advances including the advent of arthroscopy, improved implant materials, and refined repair techniques. Despite our efforts to improve the science of rotator cuff repair, clinical advances have lagged far behind. Graft augmentation of rotator cuff repairs is an emerging and heterogeneous field that has significantly improved both healing rates and patient-reported metrics in initial data reporting. Treatment algorithms that guide the use of this novel surgical modality are of benefit to practicing orthopaedic surgeons.

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We read with great interest the article entitled “Graft Augmentation of Repairable Rotator Cuff Tears: An Algorithmic Approach Based on Healing Rates” by Jackson, Bedi, and Denard.¹ This Level V study combines the rotator cuff healing index (RoHI) proposed by Kwon et al.² along with clinical data on rotator cuff augmentation to create an algorithm for the use of graft augmentation in rotator cuff repairs. The RoHI identifies patient risk factors for rotator cuff repair failure including patient age, tear size, amount of retraction, and fatty atrophy. Using the RoHI and their clinical expertise, Jackson et al. have proposed the algorithm to improve healing rates and patient-reported outcomes. Although this is a Level V paper, the authors provide a practical algorithm for clinicians.

This paper astutely outlines that, despite the many improvements to the field of shoulder arthroscopy, we simply aren't as good at rotator cuff repair as we would like to believe. Retear rates remain

astonishingly high, as evidenced by a meta-analysis by McElvany et al.³ of more than 8,000 rotator cuff repairs showing an average retear rate of 26.6% (range 0%-94.4%). While the literature has previously shown little difference in outcomes between patients with a healed cuff versus non-healed cuff,⁴ recent studies contend that a healed cuff leads to better patient outcomes and postoperative strength.⁵

Given the poor healing rates of primary rotator cuff repair, there has been much enthusiasm for the use of graft augmentation to improve the biomechanical strength of the initial repair and stimulate a biological healing response. Cadaveric biomechanical studies have shown greater load to failure and less repair displacement with graft augmentation.⁶ Clinical studies have demonstrated the clinical benefit of graft augmentation as well. A recent randomized control trial by Avanzi et al.⁷ comparing single-row repairs with and without porcine dermal allograft augmentation in small- and medium-sized tears showed a clear benefit to graft augmentation. At 24-month follow-up, the graft augmentation group showed a healing rate of 97.6% compared with a healing rate of just 59.5% in the group treated without graft augmentation. A meta-analysis by Bailey et al.⁸ of 5 studies also showed that graft augmentation led to lower retear rates and greater American Shoulder and Elbow Surgeons Shoulder Scores compared with nonaugmented repair.

With the literature beginning to elucidate the advantage of graft augmentation, its use in our practice

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has continued to evolve. While cost will continue to remain a consideration, we routinely use dermal allograft augmentation for “at-risk” rotator cuff repairs such as patients with poor tendon quality, those requiring footprint medialization, those requiring margin convergence, and in revision repair situations. The true indication for graft augmentation has remained elusive and highly gestalt based on the surgeon’s experience and clinical expertise. With that being said, papers such as this one by Jackson et al. are invaluable to the literature as we seek to define the appropriate use of this emerging technology.

In short, despite our best efforts to improve the field of arthroscopic rotator cuff repair, there is little to suggest that outcomes have drastically improved in the last 30 years.³ However, initial reports of the use of graft augmentation in rotator cuff repair demonstrate a level of clinical improvement that could lead to significant changes in the way we approach the treatment of these injuries. The report published by Jackson et al. is an important step toward both defining those most at risk for cuff repair failure and identifying the patient population that would maximally benefit from a graft-augmented repair.

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