

Rotator Cuff Repair Grafting: A Systematic Review of the Literature

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Summary:

Although many types of grafting materials have been used (autografts, allografts, xenografts, and dermal grafts), the ideal grafting material has not been found.

Abstract:

Introduction

Rotator cuff tears are reported as the most frequent cause of shoulder disability in the general population. Repair failure rates of 20-70% have been reported, and the inability to obtain a high healing rate has led clinicians and basic science researchers to investigate strategies that can augment the repair by biologically and mechanically reinforcing it with other tissues or materials. Our goal was to provide a systematic review of the current clinical results of rotator cuff grafts to determine their efficacy and to determine if their widespread use is warranted.

Materials and Methods

We searched the MEDLINE/PubMed and Excerpta Medica/EMBASE databases for the key-words "rotator cuff", "repair", "augmentation", and "grafting" to identify all related English-language literature. We excluded abstracts, case reports, letters to the editor, and meeting presentations but included review articles. Inclusion criteria included clinical studies which were grade 1 to 4 using JBJS criteria. Our initial literature search found 67 studies, of which 47 were rejected (17 biomechanical studies, 13 level V studies, ten non-English articles, and seven case reports), leaving 20 articles for our review.

Results

The literature could be divided into autografts (five publications), allografts (four studies) and xenografts (six studies). For all graft types there were two level II studies, two level III studies, and sixteen level IV. There were 466 patients overall with a mean follow-up of 27 months. Bovine xenografts had the poorest results and are no longer utilized. Four out of five studies on dermal grafts reported extremely successful clinical results, whereas only one reported less successful results. Postoperative cuff integrity was investigated with MRI in 12 studies, ultrasonography in 3, and it was not investigated in 5 studies.

Discussion: To our knowledge, there are no randomized, prospective studies that show rotator cuff graft material is necessary or helpful in reducing or eliminating pain or increasing function for full thickness rotator cuff tears. The ability of the grafts to increase function was not convincingly shown by the current literature. While these grafts are expensive, there have been no studies evaluating the cost-benefit ratio of rotator cuff grafting.

Conclusions

Biologic augmentation of rotator cuff repair is an important topic of contemporary shoulder rotator cuff treatment. The current literature is inadequate to confirm or deny the role grafting plays in successful rotator cuff repair. Additional studies are needed to support the routine use of augmentation in rotator cuff repairs.