Repair of Large to Massive Rotator Cuff Tears with the Open Versus Arthroscopic Technique: A Systematic Review

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Summary:
Arthroscopic repair of large to massive rotator cuff tears seems to result at least in similar postoperative outcomes comparing to open repair procedures. However further scientific research and better reporting are needed in order to obtain stronger conclusions.

Abstract:
Introduction: It has been suggested that arthroscopy should be performed for repair small to medium rotator cuff tears (RCTs), while for large to massive tears open surgery may result in superior outcomes. However, currently there is no definitive scientific evidence that can be used to conclude if there is some difference between the open and arthroscopic surgical techniques for the treatment of large to massive RCTs.

This study aims to evaluate and compare the reported outcomes of open vs. arthroscopic repair of this subgroup of RCTs.

Methods: The systematic review of the literature was conducted according PRISMA statement and the protocol was a priori registered at PROSPERO database. A comprehensive search was performed through October of 2015 using Medline, Scopus, Cochrane Database of Systematic Reviews, and CENTRAL databases. The reference list of the most relevant original studies was scanned for additional studies. The search strategy included the terms “rotator cuff”, “arthroscopy”, “massive” and “reparable”. It was decided to include only studies with a prospective design that assessed the outcomes of open or arthroscopic repair of large to massive rotator cuff tears, with at least 1 year of follow-up. If it was not possible to obtain the results of the subgroup of large tears, the study was excluded. Lack of means and standard deviations did not allowed the performance of meta-analysis and the heterogeneity of reported outcomes precluded the consolidation of scores data. Pooled weighted means were calculated for the clinical and functional scores. The methodological quality was assessed through Coleman score.

Results: Eleven studies were included (comprising 1083 patients, 467 with a large or massive tear), 7 reporting arthroscopic repair outcomes, 2 open repair and other 2 reporting both techniques outcomes. The method of classification was mostly by the tear size. Open procedures used only single row and mostly transosseous fixation, while arthroscopic repair used both single and double row and fixation with anchors (1-7 anchors). Most common associated procedures were subacromial decompression, anterior acromioplasty and bursectomy. Immobilisation period comprised 3 to 6 postoperative weeks, using sling or abduction pillow. Mean follow-up was 57 (12-108) months. Pooled results showed better postoperative results for arthroscopic repair concerning the Constant score (75.8 vs. 65.4, for n=98 vs. n=28) and similar results for UCLA (32.2 vs. 32.2, for n=86 vs. n=40) and ASES scores (82.1 vs. 85.0, for n=75 vs. n=13). Arthroscopic repair showed higher methodologic quality according Coleman score (85.6 ± 8.4 vs. 73.3 ± 13.1).
Conclusion: Arthroscopic repair of large to massive RCTs seems to result at least in similar postoperative outcomes comparing to open repair and, therefore, the arthroscopic technique should be recommended due to its inherent advantages. However further scientific research and better reporting are needed, in order to obtain stronger conclusions.