Outcomes of single-row and double-row arthroscopic rotator cuff repair: a systematic review

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CRD summary
This review found a possible structural healing benefit for double-row compared to single-row arthroscopic rotator cuff repair, but little evidence to support any functional differences except possibly for patients with large tears. Due to limitations of the evidence and because the result about large tears was from a subgroup analysis, the review conclusions should be treated with caution.

Authors' objectives
To compare single-row and double-row arthroscopic rotator cuff repair in terms of postoperative shoulder scores and rotator cuff integrity.

Searching
PubMed and EMBASE (July or August 2009) and Cochrane Central Register of Controlled Trials (CENTRAL) and reference lists were searched for studies published in English. Search terms were reported.

Study selection
Prospective or retrospective studies that compared single-row and double-row suture arthroscopic rotator cuff repair and reported postoperative American Shoulder and Elbow Surgeons (ASES) scores, University of California at Los Angeles (UCLA) scores, Constant scores and/or rotator cuff integrity were eligible for inclusion.

Similar single-row techniques were used across the studies and similar postoperative rehabilitation regimens were used for the single- and double-row techniques. Where reported, the mean number of suture anchors for single-row techniques ranged from 1.9 to 2.4 and the mean number of suture anchors for double-row techniques ranged from 2.3 to 3.2. Mean patient age ranged from 54.4 to 63.5 years. Follow-up ranged from 12 to 41.3 months.

Two reviewers independently selected studies for inclusion. Disagreements were referred to a third reviewer.

Assessment of study quality
Risk of bias was assessed using a method published by Spindler which covered selection bias (randomisation and baseline comparability), performance bias, combined selection and performance bias, detection bias and attrition bias.

Two reviewers performed the risk of bias assessment.

Data extraction
Mean postoperative scores for each type of repair were extracted and 95% confidence intervals (CI) were calculated. Percentages of repairs with different types of defects were extracted.

Data were extracted by two reviewers independently. Discrepancies were resolved by consensus or referral to a third reviewer.

Methods of synthesis
Results were presented in a narrative synthesis.

Results of the review
Six studies were included (n=388 participants): three randomised controlled trials and two prospective and one retrospective cohort study. Each study contained at least one bias. The authors concluded that publication bias was not
likely to affect the review’s results.

**Postoperative shoulder scores:**

Three studies reported ASES scores. Mean scores ranged from 85.9 to 92.9 for single-row and from 85.5 to 94.6 for double-row techniques, but there were no statistically significant differences between them. One study reported a stratified analysis and found a significant difference between the two repair techniques for large to massive tears (3cm or more), but not for small to medium tears.

Three studies reported UCLA scores. Mean scores ranged from 28.6 to 32.9 for single-row and from 29.5 to 33.3 for double-row techniques, but there were no statistically significant differences between them.

Four studies reported Constant scores. Mean scores ranged from 76.7 to 100.5 for single-row and from 74.4 to 104.9 for double-row techniques, but there were no statistically significant differences.

**Recurrent rotator cuff defects:**

Four studies reported the number of recurrent rotator cuff defects. One study found significantly more defects for single-row techniques. One study found significantly more anatomic healing with re-establishment of the native footprint for double-row repairs (61.3%) compared with single-row repairs (40%).

**Authors’ conclusions**

There appeared to be benefits for structural healing for all tears and possible benefits for function for large or massive rotator cuff tears with double-row fixation compared to single-row fixation. There was little evidence to support further functional differences between the techniques.

**CRD commentary**

This review had a clearly stated research question and specified the inclusion criteria regarding study design, interventions and outcomes. The literature search used three relevant databases. The search was limited to studies in English, so language and publication biases were possible. All steps in the review were performed by two reviewers independently to reduce error and bias. Results were presented as a narrative synthesis. Given that a few studies reported the same shoulder scores, a meta-analysis could have been used.

The review conclusions should be treated with a note of caution because of limitations of the evidence regarding small study sizes (which the authors acknowledged) and the fact that the result comparing tear sizes was based on a subgroup analysis.

**Implications of the review for practice and research**

**Practice:** The authors stated that a risk-reward analysis of patient age, functional demands and other quality of life issues should be considered before deciding which surgical method to employ.

**Research:** The authors stated that randomised controlled trials with longer follow-up were needed to assess whether the double-row method led to better tendon-healing rates and clinical outcomes and to identify circumstances where it was cost-efficient.

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**Bibliographic details**


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