The role of subacromial decompression in patients undergoing arthroscopic repair of full
thickness tears of the rotator cuff: a systematic review and meta-analysis

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CRD summary
This review concluded that there were no statistically significant differences in short-term subjective outcomes in patients treated with or without subacromial decompression when undergoing arthroscopic repair of full thickness rotator cuff tears (keyhole surgery to repair shoulder tendons). The authors’ conclusions reflect the evidence presented but the small number of included trials with small sample sizes may affect their reliability.

Authors’ objectives
To evaluate the effectiveness of arthroscopic repair of full-thickness rotator cuff tears with and without subacromial decompression.

Searching
The Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE and EMBASE databases were searched with no language restrictions up to September 2011. Search terms were reported. Clinicaltrials.gov and bibliographies of identified studies were also searched. Meeting abstracts from two orthopaedic societies were searched from 2009 to 2011. Where trials were published in abstract form only, the authors were contacted for the full manuscript. Content experts were also contacted.

Study selection
Eligible for inclusion were randomised controlled trials (RCTs) or quasi-RCTs that compared subacromial decompression versus no subacromial decompression in adult patients undergoing repair of full-thickness rotator cuff tears of at least one tendon. Eligible trials had to have a minimum follow-up of one year. Abstracts published over 10 years prior to search date were excluded unless a full-text publication was available.

The primary outcome of interest was disease-specific quality of life as measured by the Western Ontario Rotator Cuff (WORC) index. Other outcomes included shoulder joint-specific patient reported outcomes measured by appropriate scales (defined in the paper), postoperative range of motion and re-operation rates.

In included trials, the types of surgery were arthroscopic repair with suture anchors in a single or double row. The mean age of participants was 58.6 years; over half were men. Participants had full-thickness tears of one to four tendons and type I, II, or III acromion (outer end of the shoulder bone/scapula); one trial recruited patients with an isolated tear of the supraspinatus and a type II acromion. Measurement tools for outcomes varied between trials.

Two reviewers selected trials for inclusion. Disagreements were resolved by discussion.

Assessment of study quality
Trial quality was assessed using the CLEAR NPT (Checklist to Evaluate a Report of a Non-pharmacological Trial) tool.

Two reviewers assessed study quality.

Data extraction
Two reviewers extracted data on relevant outcomes to calculate risk ratios and mean differences, with corresponding 95% confidence intervals.

Methods of synthesis
Pooled risk ratios, mean differences and 95% confidence intervals were calculated using a random-effects model. Statistical heterogeneity was assessed using the $X^2$ test and $I^2$.

Subgroup analyses by age, gender, Workers’ Compensation status, and acromion type were used to explore heterogeneity. The robustness of the results was tested by removing one trial at a time from the pooled analysis.
Results of the review
Four RCTs (373 patients; range 80 to 114) were included in the review. Trial quality was reported to be variable. All four trials reported adequate generation and concealment of allocation. Only two trials reported appropriate experience or skills of care providers. Clinical outcome assessors were blinded in one trial. Patients were blinded in two trials. Mean follow-up ranged from 12 to 24 months. Follow-up rate ranged from 33.3% to 100%.

There were no significant differences in Western Ontario Rotator Cuff index (WORC) scores between patients treated with subacromial decompression and those not treated at follow-up (one trial; details not reported). The same trial also found no differences in WORC scores for acromion type.

There were no significant differences between groups at one year follow-up for age- and gender-normalised total Constant scores (two trials) and ASES (American Shoulder and Elbow Surgeon) scores (three trials), postoperative range of motion (one trial), or for rates of reoperation (two trials).

Subgroup and sensitivity analyses reported similar results.

There was no evidence of significant statistical heterogeneity for any of the analyses.

Authors' conclusions
There were no statistically significant differences in outcomes in the short-term period (one to two years) between patients treated with subacromial decompression and those treated without when they underwent concomitant arthroscopic repair of full-thickness rotator cuff tears.

CRD commentary
This review reported appropriate methods to obtain, extract, appraise and synthesise relevant data. However, the authors noted some limitations with the data including variability in quality and in functional outcome measures, potential lack of generalisability to patient subgroups (such as patients with Worker's Compensation), and the short-term follow-up of the trials. The authors did not fully report the results of the primary outcome, which made it difficult to verify the findings.

The authors’ conclusions reflect the evidence presented but are based on a small number of patients in a small number of trials, suggesting a potential lack of statistical power of the meta-analyses to detect a difference between treatment groups; this may affect the reliability of the authors’ conclusion.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further research was required to evaluate long-term follow-up with stratification for acromion type and Workers' Compensation status. Outcome measures should be uniformly reported and include a disease-specific quality of life measure, a generic patient reported outcome measure, objective deltoid strength measurement, and postoperative imaging to evaluate acromial morphology, rotator cuff healing and the presence of anterosuperior escape in the setting of failed or new rotator cuff tears.

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