

Cochrane in CORR

Cochrane in CORR®: Surgery for Rotator Cuff Disease (Review)

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Importance of the Topic

Rotator cuff disease is one of the most common musculoskeletal disorders [9]. According to MRI scans, as many as 54% (25/46) of asymptomatic volunteers older than 60 years of age have partial or complete tears of the rotator cuff [18]. Usually degenerative, rotator cuff tears occasionally are associated with high-velocity trauma and a more favorable prognosis [9]. Shoulder pain negatively impacts quality of life,

physical function, and leads to occupational disability [21]. In the United States alone, the diagnosis and management of rotator cuff disease presents a financial burden estimated at 300,000 procedures and USD 3 billion annually [2].

Symptomatic patients typically describe pain with overhead tasks and pain with daily activities [20]. Surgical management generally is reserved for those who fail to improve with conservative treatment, which often includes a combination of subacromial débridement

or decompression, débridement and/or repair of partial tears, and generally repair of full thickness tears [20]. Surgery can be performed using open surgery or arthroscopic approaches, but there has recently been a dramatic increase in the number of patients treated arthroscopically [20]. Purported advantages of arthroscopy include rapid recovery and decreased morbidity [7]. However, controversy persists with regards to optimal management of rotator cuff disease [1]. This Cochrane review evaluated all randomized and quasirandomized controlled

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(Coghlan JA, Buchbinder R, Green S, Johnston RV, Bell SN. Surgery for rotator cuff disease. Cochrane Database of Systematic Reviews 2008, Issue 1. Art. No.: CD005619. DOI: [10.1002/14651858.CD005619.pub2](https://doi.org/10.1002/14651858.CD005619.pub2).)

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Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and The Cochrane Library (<http://www.thecochranelibrary.com>) should be consulted for the most recent version of the review.

This Cochrane in CORR® column refers to the abstract available at: DOI: [10.1002/14651858.CD005619.pub2](https://doi.org/10.1002/14651858.CD005619.pub2).

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trials of operative and nonoperative interventions for rotator cuff disease.

Upon Closer Inspection

Intention-to-treat analysis tallies the results of participants according to the group to which they were randomized, regardless of their adherence to assigned intervention [8]. The goals of intention-to-treat are to maintain the balance of prognostic factors between groups created by randomization and to include noncompliance or protocol deviations that reflect real-world treatment effectiveness [5, 16]. In this Cochrane review, 11 of 14 trials failed to perform or report intention-to-treat analyses, and one of the trials reported that a significant number of crossovers were not analyzed in their original group [15]. Failure to employ intention-to-treat analyses typically results in an inflation of the apparent benefits of treatment; because of this, in the studies included in this Cochrane review, the benefits of surgery or other invasive interventions may have been overestimated as a result of failure to use intention-to-treat approaches.

Differential expertise bias is a unique feature of surgical randomized trials that suggests the performance of a novel or alternative procedure by a less-experienced surgeon may lead to inferior outcomes [17]. Expertise-based trial designs attempt to minimize

bias and improve validity, feasibility, and ethical integrity by randomizing patients between surgeons with expertise in the intervention of interest [17]. Six of the included trials found no differences in pain or function between arthroscopic and open management of rotator cuff tears, but none adequately described surgeon expertise.

Take-Home Messages

This Cochrane review finds no difference in either functional outcome scores or pain relief between surgical and active nonoperative treatment for impingement syndrome based on three of the 14 included trials at high-risk of bias. Additionally, the review further concluded that no differences exist with regards to pain or functional outcomes between open or arthroscopic subacromial decompression based on six of the 14 trials reporting this comparison.

This Cochrane review demonstrates the need for large, rigorously designed, and well-executed randomized trials [8, 19]. Significant methodological deficiencies preclude firm conclusions regarding the effectiveness of open versus arthroscopic surgical approaches and conservative management for rotator cuff disease. The results of this review are echoed in a recent American Academy of Orthopaedic Surgeons (AAOS) Clinical Practice Guideline Summary [13]. Nineteen of the 31

recommendations were inconclusive due to lack of high quality evidence.

Future studies can enhance the transparency of their methodological quality by emphasizing clear reporting [6, 11]. The Consolidated Standards of Reporting Trials statement was developed to guide the reporting of randomized controlled trials [12], and modified as the Checklist to Evaluate a Report of a Nonpharmacological Trial to address the unique methodological issues inherent to surgical trials [3]. Low-quality reporting has been identified in the orthopaedic literature using these guidelines [6, 10, 14]. Clear reporting of outcomes will allow readers to appropriately evaluate bias and safeguard in future studies [4, 6, 11].

Uniform reporting of patient-important outcomes, as well as objective clinical evaluation of specific rotator cuff muscle strength, and standardized measurement of ROM have been inconsistent and will be critical to fully understand differences between groups. Clinicians must also consider variance in patient's goals, desires, and expectations. Published studies tend to group older and younger patients together despite the fact that younger patients generally have a better prognosis and desire improved performance, whereas older patients generally desire pain relief.

Appendix

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Surgery for rotator cuff disease (Review)

Coghlan JA, Buchbinder R, Green S, Johnston RV, Bell SN



This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2009, Issue 1

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Surgery for rotator cuff disease (Review)
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[Intervention Review]

Surgery for rotator cuff disease

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Editorial group: Cochrane Musculoskeletal Group.

Publication status and date: Edited (no change to conclusions), published in Issue 1, 2009.

Review content assessed as up-to-date: 3 September 2007.

Citation: Coghlan JA, Buchbinder R, Green S, Johnston RV, Bell SN. Surgery for rotator cuff disease. *Cochrane Database of Systematic Reviews* 2008, Issue 1. Art. No.: CD005619. DOI: 10.1002/14651858.CD005619.pub2.

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ABSTRACT

Background

This review is one in a series of Cochrane reviews of interventions for shoulder disorders.

Objectives

To determine the effectiveness and safety of surgery for rotator cuff disease.

Search methods

We searched the Cochrane Controlled Trials Register, (*The Cochrane Library* Issue 1, 2006), MEDLINE, EMBASE, CINAHL, Sports Discus, Science Citation Index (Web of Science) in March 2006 unrestricted by date or language.

Selection criteria

Only studies described as randomised or quasi-randomised clinical trials (RCTs) studying participants with rotator cuff disease and surgical interventions compared to placebo, no treatment, or any other treatment were included.

Data collection and analysis

Two independent review authors assessed methodological quality of each included trial and extracted data.

Main results

We included 14 RCTs involving 829 participants. Eleven trials included participants with impingement, two trials included participants with rotator cuff tear and one trial included participants with calcific tendinitis. No study met all methodological quality criteria and minimal pooling could be performed. Three trials compared either open or arthroscopic subacromial decompression with active non operative treatment (exercise programme, physiotherapy regimen of exercise and education, or graded physiotherapy strengthening program). No differences in outcome between these treatment groups were reported in any of these trials. One trial which also included a placebo arm (12 sessions detuned soft laser) reported that the Neer score of participants in both active treatment arms improved significantly more than those who received placebo at six months.

Surgery for rotator cuff disease (Review)

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Six trials that compared arthroscopic with open subacromial decompression reported no significant differences in outcome between groups at any time point although four trials reported a quicker recovery and/or return to work with arthroscopic decompression. Adverse events, which occurred in three trials and included infection, capsulitis, pain, deltoid atrophy, and reoperation, did not differ between surgical groups.

Authors' conclusions

Based upon our review of 14 trials examining heterogeneous interventions and all susceptible to bias, we cannot draw firm conclusions about the effectiveness or safety of surgery for rotator cuff disease. There is "Silver" (www.cochranemsk.org) level evidence from three trials that there are no significant differences in outcome between open or arthroscopic subacromial decompression and active non-operative treatment for impingement. There is also "Silver" level evidence from six trials that there are no significant differences in outcome between arthroscopic and open subacromial decompression although four trials reported earlier recovery with arthroscopic decompression.

PLAIN LANGUAGE SUMMARY

Surgery for rotator cuff disease

This summary of a Cochrane review presents what we know from research about the effect of surgery for rotator cuff disease. The review shows that surgery:

may not lead to any difference in pain compared with different exercise programs.

The review shows that arthroscopic surgery:

may not lead to any difference in outcome in the long run compared with open surgery but people might recover sooner.

There was not enough information in the included studies to tell whether surgery would make a difference in the ability to use your shoulder normally, your quality of life, your shoulder's range of motion, your strength, the chance that your symptoms might come back, the time it takes to return to work or sports and whether people are satisfied with surgery.

Side effects that occurred in the studies included pain, infection, difficulty moving the shoulder after the operation, wasting of the shoulder muscle, and the need to have another surgical procedure. There were no differences in side effects in the people who had arthroscopic surgery compared with those who had open surgery.

What is rotator cuff disease and what is surgery?

The rotator cuff is a group of tendons that hold the shoulder joint in place. The rotator cuff lets people lift their arm and reach overhead. In a lot of people, wear and tear of the rotator cuff tendons is a normal part of ageing and they may not have symptoms. However many people will develop pain in their shoulder at some time as the tendons degenerate further and tears in the rotator cuff tendons develop. There may also be inflammation of the shoulder tendons or bursa (another part of the shoulder that helps it move). Often the pain is made worse by sleeping on the affected shoulder and moving the shoulder in certain directions. Often there will be pressure on the tendons by the overlying bone when lifting the arm up. This is called impingement. It may become difficult to use the shoulder in every day activities, sports or work.

To diagnose rotator cuff disease, a doctor will examine your shoulder and ask you questions about your ability to move it, and the situations that cause pain.

If the pain does not go away by itself or with various treatments like steroid injections or physiotherapy or both, surgery can be performed. Surgery on your rotator cuff may include removing part of your bone to take the pressure off the rotator cuff tendons (acromioplasty), removing any swollen or inflamed bursa (the small sack of fluid around the joint), and removing any damaged tissue to help heal the remaining tissue. This is called a 'decompression'. If one of the tendons of the rotator cuff is torn, the doctor might use special stitches to repair it. This is called a 'repair'.

Some procedures can be performed arthroscopically (surgical instruments are inserted through a small incision or key hole and an endoscope to visualise the area and to guide the doctor is inserted through another incision), which can mean a shorter recovery time.

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