Arthroscopic versus open acromioplasty: a meta-analysis

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CRD summary
This review compared arthroscopic with open acromioplasty for treatment of subacromial impingement syndrome and concluded that they had equivalent ultimate clinical outcomes, operative times and low complication rates and that arthroscopic procedures had faster patient recovery. Because of various methodological and reporting flaws, the conclusion may not be reliable.

Authors' objectives
To compare the effects at least one year after surgery of arthroscopic versus open acromioplasty for the treatment of subacromial impingement syndrome.

Searching
PubMed was searched from inception to 2007; keywords used were reported. Additional handsearching of proceedings from four major orthopaedic meetings (American Academy of Orthopaedic Surgeons, American Orthopaedic Society for Sports Medicine, Arthroscopy Association of North America, American Shoulder and Elbow Surgeons Open meetings) from 2000 to 2007 were performed. Reference lists of retrieved relevant articles were searched for further studies.

Study selection
Eligible studies had to directly compare arthroscopy versus open acromioplasty techniques for treatment of subacromial impingement syndrome.

Within the included studies, mean follow-up ranged from 12 to 96 months for arthroscopic subacromial decompression (ASD) and from 13 to 96 months for open subacromial decompression (OSD).

Two reviewers performed the study selection with 100% agreement.

Assessment of study quality
No validity assessment was reported.

Data extraction
Three different types of shoulder outcome scores (University of California at Los Angeles, Constant and Penn Shoulder Score) were extracted and normalised onto a 100-point scale; additional outcome data extracted included subject satisfaction scores, operation time in minutes, days until return to work and number of complications.

The authors did not state how many reviewers performed data extraction.

Methods of synthesis
Mean differences were pooled using meta-analysis weighted by the inverse of study variance using the methods of Basu; the type of model used was not stated.

The authors did not state how many reviewers performed the synthesis.

Results of the review
Nine studies were included. Total sample size appeared to be 690 patients (range 20 to 176).

Overall, the review reported no statistically significant difference between arms in 100 point scores (mean difference 0.34, 95% CI -0.86 to 1.54; slightly favouring arthroscopic surgery; based on seven studies), patient satisfaction rates
(mean difference -3.0%, 95% CI -7.7% to 1.7%; slightly favouring open surgery; based on seven studies) and complication rates (mean difference -1.0%, 95% CI -4.0% to 3.0%; slightly favouring open surgery; based on five studies). There were statistically significant differences in hospital stay duration (average 2.3 days shorter in arthroscopic group, 95% CI -2.5 to -2.0 days; based on five studies) and time until return-to-work (average 12.1 days shorter in arthroscopic group, 95% CI -13.9 to -10.3 days; based on five studies). The arthroscopic group had statistically significant but clinically insignificant reduction in operation room time (2.2 minutes less, 95% CI -3.8 to -0.6 minutes; based on four studies).

Authors' conclusions
Arthroscopic and open acromioplasty had equivalent ultimate clinical outcomes, operative times and low complication rates. However, arthroscopic acromioplasty resulted in faster return to work and fewer hospital in-patient days compared to open acromioplasty.

CRD commentary
This review addressed a clear review question using simple, clear and appropriate study selection criteria. Only one database was searched, but additional handsearching was relatively comprehensive. Language restrictions were not stated, so the possibility of language bias could not be ruled out. Primary study details were very limited, which made it difficult to evaluate the studies. The possibility that clinical heterogeneity was substantial could not be ruled out. No assessment of statistical heterogeneity was made. No study quality assessment was reported, so it was not possible to determine the strength of the evidence. Few details were provided on exactly how data were combined using meta-analyses. The conduct of the data extraction stage of the review was unclear, so the possibility of error and bias could not be ruled out.

In view of the review's numerous methodological and reporting flaws, the authors' conclusions are unlikely to be reliable.

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

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