Systematic review of arthroscopic subacromial decompression using the holmium:YAG laser: update and re-appraisal

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Authors' objectives
To compare the efficacy and safety of arthroscopic subacromial decompression (ASD) using a holmium:YAG laser for patients with impingement syndrome.

Searching
The review used an updated search of an original search performed in 1998. MEDLINE (from 1984 to July 2000), Current Contents (from 1993 to week 33, 2000), the Cochrane Library (Issue 3, 2000) and EMBASE (from 1974 to August 2000) were searched for publications in the English language using a variety of search terms, which were listed in detail in the review report.

Study selection
Study designs of evaluations included in the review
The inclusion criteria specified randomised controlled trials (RCTs), controlled clinical trials (historical, non-randomised), case-series and case reports. Additional published material (letters, commentaries, discussions) were included as background material. Other study designs were also included if they were relevant and if valid reasons for doing so were stated in the review protocol.

Specific interventions included in the review
ASD using a holmium:YAG laser to perform acromioplasty, croacromial ligament resection and busectomy was compared with ASD using a motorised shaver, burr and electrocautery technique.

Participants included in the review
The inclusion criteria specified adult patients with impingement syndrome, without full-thickness rotator cuff tears or rheumatological disorders, who had experienced shoulder pain for more than three months.

Outcomes assessed in the review
The inclusion criteria specified outcomes of post-operative mortality, post-operative morbidity (including blood loss), shoulder score, length of hospital stay, use of analgesics, time to return to normal activity, pain (at night, rest, movement), range of motion (active or passive), level of function or strength, and length of surgery. The included papers had to report at least one of these outcomes. The shoulder score included data for a number of different shoulder tests.

How were decisions on the relevance of primary studies made?
A surgeon and a reviewer independently assessed the retrieved articles for inclusion in the review. Any disagreements were resolved by consensus.

Assessment of study quality
The authors did not report a formal assessment tool for assessing validity. They did, however, use the guidelines from the National Health and Medical Research Council to assess the level of evidence (see Other Publications of Related Interest no.1). There was also a general discussion of study quality in the text of the review.

Data extraction
The authors did not state how the data were extracted for the review, or how many of the reviewers performed the data extraction.
Methods of synthesis

How were the studies combined?
The studies were combined in a narrative synthesis of the included papers in terms of their methodology and design, sample size, outcomes and the possible influence of bias.

How were differences between studies investigated?
The authors did not state a method for assessing any differences between the studies.

Results of the review

Eight studies were included in the review. However, two of the studies were later excluded from the analysis because of the type of intervention used. None of the included studies were RCTs.

None of the included papers offered high-quality evidence. The highest level of evidence came from time series studies. Only two research groups were identified as having published relevant data.

Authors’ conclusions

On the basis of the available studies, the ASERNIP-S Review Group recommended that the holmium:YAG procedure be given a level 2 classification. This view was endorsed by the Royal Australasian College of Surgeons. This classification states that ‘the safety and/or efficacy of the procedure cannot be determined at the present time due to an incomplete and/or poor quality evidence base’. These results are also reported in a related paper by the review team (see Other Publications of Related Interest no.2). Given the extremely low level of evidence available for this procedure it was recommended that further research be conducted to establish the safety and efficacy of the technique. This reinforces the conclusion reached in the Cochrane review of interventions for shoulder pain, where insufficient evidence was found to either support or refute the efficacy of other interventions for shoulder pain.

CRD commentary

The authors stated the research question and reported, in detail, the inclusion and exclusion criteria for all categories. The literature search was fairly thorough and attempts were made to find unpublished or grey literature, although the searches were limited to English language publications. It was not stated whether there were tests for publication bias.

The quality of the included studies was not formally assessed and, while the authors have reported how the articles were selected, they have not stated who performed the data extraction. The data extraction was reported briefly in tables in the review and was briefly discussed in the text. The participants’ characteristics were missing from these details. The authors’ conclusions appear to follow from the results, although the authors acknowledge that these are of limited value since the results were taken from very few studies and the quality of the included studies was low.

Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors state that a controlled clinical trial should be undertaken to strengthen the evidence base for the procedure. If such a trial is not possible, then data should be gathered to contribute to an audit for further assessment, in collaboration with ASERNIP-S, until such time as a controlled clinical trial is undertaken.

Bibliographic details


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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.