Systematic review of randomized controlled trials comparing laparoscopic with open appendicectomy

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Authors' objectives
To assess the role of laparoscopic surgery when compared with open appendicectomy in the management of patients with suspected appendicitis.

Searching
MEDLINE and Index Medicus were searched from January 1989 onwards. The references from the papers extracted were cross-checked, and the search was supplemented by a manual search of major conference proceedings.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) that compared open with laparoscopic appendicectomy were included.

Specific interventions included in the review
Laparoscopic surgery and open surgery.

Participants included in the review
All of the studies, bar two which only recruited men, included both men and women that had a clinical diagnosis of acute appendicitis and were considered suitable for either open or laparoscopic appendicectomy. One study excluded patients with perforated appendicitis and diffuse peritonitis. The mean or median age ranged from 24 to 32 years.

Outcomes assessed in the review
Operating time, length of post-operative hospital stay, wound infections, complications, and return to normal activity were assessed.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
No formal assessment of validity was undertaken.

Data extraction
Standard data were extracted from each paper and checked independently by two authors to minimise extraction bias. Additional information was sought from several of the authors where necessary.

Methods of synthesis
How were the studies combined?
The studies were combined by a narrative review.

How were differences between studies investigated?
The authors do not state how differences between the studies were investigated.

Results of the review
Ten studies were included. These evaluated 633 patients who received laparoscopic surgery and 542 that were treated with open surgery.

The operating time was longer for laparoscopic appendicectomy in all studies (the means values differed by 8 to 29 minutes) and was significant in 5 of the 7 trials in which this outcome was evaluated. The post-operative hospital stay was shorter for laparoscopic appendicectomy in 5 of the 6 trials which assessed this outcome. In 4 of these trials, this difference was statistically significant; the mean stay ranged from -2.1 to 0.8 days.

In the majority of the trials laparoscopic appendicectomy was associated with a quicker return to normal activity; the mean difference ranged from 0.6 to 17 days. The difference was statistically significant in 4 of the 7 trials in which this outcome was assessed.

Both treatments were associated with wound infections, the rate being higher for patients treated with open appendicectomy in all but one trial (odds ratio 2.6, 95% confidence interval: 1.3, 5.2; in favour of laparoscopic surgery). The reduced risk for wound infections for laparoscopic surgery was not associated with an increase in complications.

There was a bias within the studies, in particular, resulting from a lack of blinding.

Authors' conclusions
Laparoscopic appendicectomy was associated with some advantages and no obvious disadvantages, apart from prolonged operating time.

CRD commentary
The search strategy was well described, although the inclusion of the key search terms would have been useful. The restriction of the electronic search to a single database (MEDLINE) suggests that some published studies, particularly those published outside of the USA, may have been missed. The inclusion criteria were quite open, but this is likely to be a reflection of the small amount of literature available in this field. The openness of the inclusion criteria has resulted in the review including studies which are highly heterogeneous, and for this reason, a formal validity assessment of the studies would have been advantageous.

This was a good review, but its conclusions suffer from the quality of the primary studies included.

Implications of the review for practice and research
The authors state that 'future RCTs should be blinded to minimise bias, document adequate follow-up and analyse results on an intention-to-treat basis'.

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Subject indexing assigned by NLM

MeSH
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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.