Laparoscopic versus open repair of incisional/ventral hernia: a meta-analysis
Saajid M S, Bokhari S A, Mallick A S, Cheek E, Baig M K

CRD summary
This review found that laparoscopic repair of incisional/ventral hernia was a safe, feasible and effective alternative to open repair techniques and was associated with shorter hospital stays and lower incidence of complications. These conclusions should be interpreted with caution given the possibility of publication bias, failure to appropriately assess study quality, and lack of study details.

Authors' objectives
To compare laparoscopic and open repair of incisional/ventral hernia.

Searching
MEDLINE, EMBASE, CINAHL and the Cochrane Library were searched for studies published between 1993 and August 2007. Search terms were reported. Reference lists were screened to identify additional studies.

Study selection
Randomised controlled trials (RCTs) that compared laparoscopic and open surgery for repair of incisional/ventral hernia were eligible for inclusion. Included trials had to report on surgical time, total duration of hospital stays, perioperative complications, postoperative wound pain, or recurrence rates. Trials in both day-surgery and in-patients were eligible.

Trials used a variety of different techniques for both open and laparoscopic repair; full details are reported in the paper.

Two reviewers assessed studies for inclusion.

Assessment of study quality
Trials were assessed for methodological quality based on the following criteria: description of inclusion/exclusion criteria, randomisation technique, sample size calculation, baseline comparability reported, blinding, cross-over, loss to follow-up evaluation, allocation concealment, and analysis by intention-to-treat.

The authors did not state how many reviewers performed the validity assessment.

Data extraction
For trials that did not use standard format visual analogue scale for pain scores, outcome units were converted into units of visual analogue scale. Standardised mean differences, based on the Hedges g statistic, were calculated for continuous data (surgical time, hospital stay and pain score). Relative risks were estimated for dichotomous outcomes (complications and recurrence). If standard deviations were not reported they were estimated from ranges or p-values.

Two reviewers independently extracted data which was confirmed by a third reviewer.

Methods of synthesis
Standardised mean differences and relative risks were pooled using both fixed-effect (inverse variance weighted) and random-effects (DerSimonian and Laird) models. The results reported in this abstract are for the random-effects models. Heterogeneity was assessed using the Q statistic.

Results of the review
Five RCTs (n=366) were included. Four trials provided details on the method of randomisation, which appeared adequate. Only one trial was reported to be blinded. One trial reported details of allocation concealment. None of the
trials reported using an intention-to-treat analysis.

Open incisional/ventral hernia repair was associated with increased complication rates (relative risk 0.49, 95% confidence interval (CI): 0.33 to 0.73; five RCTs) and longer hospital stay (standardised mean difference 1.82, 95% CI: 0.44 to 3.21; five RCTs) compared to laparoscopic repair. There was no evidence of heterogeneity for complications (p=0.10) but there was strong evidence of heterogeneity for duration of hospital stay (p<0.001).

There was no difference in surgical time, post-operative pain, or recurrence rate between patients randomised to laparoscopic repair and those randomised to open repair.

**Authors’ conclusions**
Laparoscopic repair of incisional/ventral hernia was a safe, feasible and effective alternative to open repair techniques and was associated with shorter hospital stays and lower incidence of complications.

**CRD commentary**
The review addressed a focused question supported by clearly defined inclusion criteria. The literature search was adequate but the review was restricted to published studies, so there is a possibility of publication bias. Appropriate steps were taken to minimise bias and errors in the selection of trials and extraction of data, but it was unclear whether such steps were also taken for the assessment of methodological quality. Appropriate criteria were used to assess study quality, but the reporting of the results was confusing: most items were only reported as listed/stated or not listed/not stated, rather than providing details on whether these were adequately fulfilled. Randomisation techniques were briefly reported without sufficient details to determine whether this was adequate. Consequently, the methodological quality of the included trials remained unclear. Very few details of the included trials are reported, which made it difficult to assess the generalisability of the review findings. Methods used to pool results were appropriate. The results were clearly presented in the text and used forest plots for each outcome assessed. The authors’ conclusions are supported by the data presented but should be interpreted with caution given the possibility of publication bias, failure to appropriately assess trial quality, and lack of trial details.

**Implications of the review for practice and research**
**Practice:** The authors stated that laparoscopic repair may be considered for incisional/ventral hernia repair if technically feasible.

**Research:** The authors stated that further trials with longer follow-up are needed to strengthen the evidence.

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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.