Laparoscopy or laparotomy for distal tubal surgery: a meta-analysis
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CRD summary
The review concluded that there were no significant differences in pregnancy rates between open microsurgery and laparoscopic techniques for mild degrees of distal tubal disease, but open microsurgical techniques should be used for patients with severe tubal disease. However, given the small number of included studies and their uncertain methodological rigour, the authors’ conclusions should be interpreted with caution.

Authors' objectives
To compare pregnancy rates after laparoscopic surgery with those of laparotomy surgery for the treatment of distal tubal disease.

Searching
MEDLINE (from 1966), the Cochrane CENTRAL Register, EMBASE (from 1980), and the Cochrane Menstrual Disorders and Subfertility Group's specialised register of controlled trials were searched to July 2005; the search terms were not reported.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion. Other designs were also eligible if the intervention was performed in the same hospital unit with patients in both groups having equivalent tubal damage, and if the patients were operated on by the same surgeons or group of surgeons. Studies using a control group significantly different in terms of tubal damage or surgeons were excluded. The studies were published between 1987 and 1996.

Specific interventions included in the review
Studies comparing laparoscopic techniques and conventional open microsurgery laparotomy (including salpingostomy, fimbrioplasty, adenexal adhesiolysis) for the treatment of distal tubal disease were eligible for inclusion. Studies comparing techniques for reversal of sterilisation, proximal tubal obstruction and adhesiolysis were excluded. The included studies compared laparoscopic techniques with open microsurgical salpingostomy, salpingo-ovariolysis, fimbrioplasty and adenexal adhesiolysis.

Participants included in the review
Studies of women in the reproductive period undergoing surgery for distal tubal disease for the treatment of subfertility were eligible for inclusion. Studies classified tubal disease using methods by Hulka, Bremmond and Rochat, and Mage and Bruhat.

Outcomes assessed in the review
Studies assessing the intra-uterine pregnancy rate, 'take home baby rate' and ectopic pregnancy rate per pregnancy were eligible for inclusion. Follow-up, where reported, ranged from 18 months to 2 years.

How were decisions on the relevance of primary studies made?
Two independent reviewers appear to have conducted the searches and selected studies. Any disagreements were resolved by consensus.

Assessment of study quality
The authors do not appear to have assessed validity.

Data extraction
Two independent reviewers appear to have extracted the data, with any disagreements resolved through consensus. Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated. Study authors were contacted for additional information, if required.
Methods of synthesis
How were the studies combined?
The results from individual studies were combined and pooled ORs and 95% CIs calculated using a random-effects model.

How were differences between studies investigated?
Heterogeneity was assessed using the chi-squared and I-squared tests. Subgroup analyses were conducted, comparing intra-uterine pregnancy rates in laparoscopy group with conventional microsurgery groups and according to the extent of tubal damage (mild or severe).

Results of the review
Five non-randomised controlled studies (n=814) were included in the analysis, four of which were retrospective.

One study found a significantly higher ‘take home baby’ rate for laparoscopic treatment compared with laparotomy (OR 2.10, 95% CI: 1.27, 3.47, p<0.05). There were no significant differences between the laparoscopic and laparotomy groups for intra-uterine pregnancy rates (5 studies, n=814) or ectopic pregnancy rates (5 studies, n=242), but there was evidence of statistical heterogeneity between the studies for both outcomes.

Subgroup analysis showed no significant differences in the rate of intra-uterine pregnancy between laparoscopy and laparotomy groups for patients with mild tubal disease (3 studies, n=496), but there was a significant increase in the intra-uterine pregnancy rate in the laparotomy group for patients with severe stage tubal disease (3 studies, n= 296; OR 2.88, 95% CI: 1.16, 7.16, p=0.02). There was, however, evidence of statistical heterogeneity for patients with mild tubal disease.

Authors’ conclusions
The findings did not indicate a significant difference in pregnancy rates between open microsurgery and laparoscopic techniques for mild degrees of tubal damage. For patients with severe tubal disease, open microsurgical techniques should be utilised.

CRD commentary
The review question was clear in terms of the study design, population, intervention and outcomes. Several relevant sources were searched, but no attempts were made to minimise publication bias. The authors provided few details about the search strategy, so it is not possible to comment further on its reliability or the risk of language bias. It appears that methods were used to minimise reviewer error and bias in the study selection and data extraction processes. Since study validity was not assessed it is difficult to assess the reliability of the data. However, the majority of included studies were retrospective and all were non-randomised studies; this suggests that the data may have methodological limitations. In particular, the authors reported that selection bias may be a problem in at least one of the 3 studies. In addition, the most recent publication date for included studies was 1996, which the authors acknowledged may limit the applicability of the data given the recent improvements in technique and instrumentation. In summary, given the small number of included studies and the uncertainties regarding their methodological rigour, the authors’ conclusions should be interpreted with caution.

Implications of the review for practice and research
Practice: The authors stated that open microsurgical techniques should be used for patients with severe distal tubal disease.

Research: The authors stated that further RCTs comparing laparoscopy with microsurgery and using the ‘take home baby’ rate as a primary outcome are necessary.

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