Vaginal hysterectomy versus total laparoscopic hysterectomy for benign disease: a metaanalysis of randomized controlled trials

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CRD summary
This review concluded that total laparoscopic hysterectomy may offer benefits over vaginal hysterectomy for benign disease. This conclusion was appropriately cautious. The paucity of data (acknowledged by the authors), limited quality of the included trials and incomplete reporting of review process should be borne in mind when interpreting the pooled results.

Authors' objectives
To compare the perioperative and postoperative outcomes associated with vaginal hysterectomy versus total laparoscopic hysterectomy for benign disease.

Searching
PubMed, SCOPUS and The Cochrane Library were searched from January 1989 (first report of laparoscopic hysterectomy) to June 2010. Search terms were reported. No language restrictions were applied. On-line trial registries and the bibliographies of retrieved articles were screened for additional studies.

Study selection
Randomised controlled trials (RCTs) that compared vaginal hysterectomy with total laparoscopic hysterectomy in women undergoing surgery for benign gynaecological disease were eligible for inclusion. The primary outcome measure was perioperative complication rate (defined as complications during or within six weeks of surgery). Complications were classified using the 5-point Dindo scale. Secondary outcomes were operating time, blood loss, urinary tract injury, rate of conversion to laparotomy, postoperative pain, and length of postoperative stay.

Most trials excluded women with pelvic organ prolapse, large uteri (various definitions), and known or suspected endometriosis. All but one of the included trials reported use of antibiotic prophylaxis.

The authors did not state how many reviewers performed the study selection.

Assessment of study quality
The methodological quality of included trials was assessed using the Jadad score, which gave a maximum score of 5 points based on randomisation, blinding, and reporting of drop-outs and withdrawals.

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

Data extraction
Data were extracted for each trial and treatment group on the number and grade of perioperative complications, numbers of urinary tract injuries, conversions to laparotomy, operating time (minutes), length of postoperative stay, volume of operative blood loss (mL), and postoperative pain score (visual analogue scale; VAS). Ordinal data were used to calculate odds ratios (OR) with 95% confidence intervals (CIs). Continuous data were used to calculate weighted mean differences (WMDs) with 95% confidence intervals.

Methods of synthesis
Pooled estimates of odds ratio or weighted mean difference, with 95% confidence intervals, were calculated using a DerSimonian and Laird random-effects model. Where possible, data were analysed on an intention-to-treat basis. Between trial heterogeneity was assessed using Cochran's Q test.

Publication bias was assessed using funnel plots and the Horbold-Egger test.

Results of the review
Five RCTs (n=663 women, range 40 to 400) were included in the review. Three of the included trials were of moderate quality (Jadad score 2 or 3). Two trials were of low quality (Jadad score 0 or 1).

There were no significant differences in perioperative complication rates (total or by grade; five RCTs), rates of urinary tract infection (five RCTs), rates of conversion to laparotomy (three RCTs), or operative blood loss (three studies) between vaginal hysterectomy and total laparoscopic hysterectomy. There was no evidence of significant heterogeneity in any data set.

Total laparoscopic hysterectomy was associated with significantly longer operating times (WMD 29.31 minutes, 95% CI 13.33 to 45.30; five RCTs; statistically significant between trial heterogeneity).

Compared with vaginal hysterectomy, total laparoscopic hysterectomy was associated with significantly shorter postoperative stay (WMD -0.62 days, 95% CI -0.89 to -0.35; four RCTs; no evidence of significant heterogeneity) and lower postoperative pain scores (VAS) on the day of surgery (WMD -2.13, 95% CI -4.08 to -0.18; three RCTs; significant between trial heterogeneity).

**Authors’ conclusions**

Total laparoscopic hysterectomy may offer benefits over vaginal hysterectomy for benign disease, although the analysis was probably underpowered for rare complications.

**CRD commentary**

The review addressed a clearly stated research objective; appropriate inclusion criteria were defined. A number of sources were searched for relevant studies. No language restrictions were applied and trial registries were searched, which reduced the likelihood of language and/or publication bias. Reporting of the review process was limited; it was not clear whether any measures were taken to minimise error and/or bias in study selection, data extraction and quality assessment. Only five small trials of moderate to poor quality were included.

The authors’ conclusions were appropriately cautious. The pooled estimates of effects should be interpreted with care given the paucity of data (acknowledged by the authors), limited methodological quality of included trials and incomplete reporting of the review process.

**Implications of the review for practice and research**

**Practice**: The authors did not specify any recommendations for practice.

**Research**: The authors stated that further studies were required to assess long term outcomes, including prolapse, urinary incontinence and sexual function, as well as the financial implications of using total laparoscopic hysterectomy versus vaginal hysterectomy.

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