Laparoscopically assisted vaginal hysterectomy: a suitable substitute for abdominal hysterectomy?

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Laparoscopically-assisted vaginal hysterectomy (LAVH) was compared with total abdominal hysterectomy (TAH).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis. The study was conducted from the perspective of the hospital.

Study population
The study population comprised women requiring hysterectomy.

Setting
The setting was secondary care. The economic analysis was carried out in the USA.

Dates to which data relate
The effectiveness evidence dated from January 1992 to June 1996. The dates during which the cost evidence were obtained were not given.

Source of effectiveness data
The effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing was carried out retrospectively on the same sample of patients as that used in the effectiveness analysis.

Study sample
No power calculations to determine the sample size were reported. All women undergoing LAVH at New York Hospital during a 4-year period were included in the study (n=117). The study sample for the control group comprised women undergoing TAH during the same time period, who matched the LAVH group in terms of their age, parity, weight, uterine weight, prior surgery and having had a bilateral salpingo-oopherectomy during surgery. The sample for the TAH group (n=117) was selected randomly in terms of the day and month of surgery, as different surgeons operated on different days of the week. The baseline characteristics were given.

Study design
This was a single-centre, retrospective, matched cohort study based on hospital records. The patients for the TAH group were selected randomly from the sample meeting the matching criteria. The follow-up was limited to the length of the hospital stay.

**Analysis of effectiveness**
The basis of the analysis was intention to treat, cases that were intended to be LAVH but ended up as TAH being included in the analysis. The outcome measures were operation time (minutes), blood loss (mL), whether there was a transfusion, intraoperative or postoperative complications, and the length of hospital stay (days). Failed LAVH was included as an intraoperative complication.

The mean age of the patients in each group was 49 (+/- 0.9) years (range: 28 - 82). The average parity was 2 (+/- 0.3) (range: 0 - 4). The average weight was 72.7 (+/- 0.5) kg (range: 45.5 - 100). The average uterine weight was 164 (+/- 9.6) g (range: 31 - 486). Of the 50 patients in each group who had undergone surgery, 10 underwent cone biopsy, 9 dilatation and curettage, 7 laparoscopy, 7 bilateral tubal litigation, 5 hysteroscopy, 4 submucous fibroid resection, 2 endometrial biopsy, 2 Caesarean section, 2 salpingo-oopherectomy, one endocervical curettage, and one Marshall-Marchetti-Krantz procedure/anterior and posterior colporrhaphy.

The preoperative diagnoses in the LAVH group included 60 abnormal uterine bleeding, 38 uterine corpus or cervical abnormalities, one chronic pelvic pain, 13 pelvic relaxation and 5 ovarian abnormalities.

The matched patients in the TAH group were similar in most respects, the exceptions being the 13 patients with pelvic relaxation and cases performed at the discretion of the individual surgeons.

**Effectiveness results**
The mean operating time was 230 (+/- 5) minutes (range: 130 - 390) in the LAVH group, and 120 (+/- 3) minutes (range: 25 - 270) in the TAH group, (p<0.001)).

The mean blood loss was 453 (+/- 26.2) mL (range: 30 - 1,500) in the LAVH group, and 400 (+/- 20.1) mL (range: 75 - 800) in the TAH group, (p<0.01)).

Seventeen of the 117 LAVH cases needed blood transfusion, compared with 7 of the 117 TAH, (p<0.5).

There were 13 intraoperative complications (including 9 failed LAVH) in the LAVH group and 4 in the TAH group.

There was one postoperative complication in the LAVH group and 2 in the TAH group.

The mean hospital stay was 2.68 (+/- 0.13) days (range: 1 - 9) for the LAVH group, and 4.89 (+/- 0.34) days (range: 3 - 10) for the TAH group.

**Clinical conclusions**
LAVH gives a shorter hospital stay than TAH, but a greater chance of intraoperative complications and need for blood transfusion.

**Measure of benefits used in the economic analysis**
No summary measure of benefit was used. The study was therefore considered a cost-consequences analysis.

**Direct costs**
No discounting was carried out, but it was irrelevant due to the short time horizon of the study. The costs calculated included operating room fees, equipment fees, anaesthesia fees, semiprivate room rates, fees for medications and laboratory tests. The surgeons' fees were excluded. The unit costs and the resource quantities were not reported separately. The source of the costs was not stated. The price year was not given.
Statistical analysis of costs
A statistical comparison of the total costs was carried out, details of which were not given.

Indirect Costs
No indirect costs were included in the analysis.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The cost of the "average" case, excluding the surgeon's fee, was $13,343 (+/- 351) for a patient in the LAVH group and $13,244 (+/- 630) in the TAH group, (p<0.1). The costs of adverse effects were not explicitly included in the costing. Only those costs incurred while the patients were in hospital were included.

Synthesis of costs and benefits
Not relevant.

Authors' conclusions
"LAVH (laparoscopically-assisted vaginal hysterectomy) offers benefits to patients in the form of less time in the hospital and presumably, therefore, faster recovery, though at the expense of potentially longer intraoperative time, increased risk of blood transfusion and increased risk of intraoperative complications."

CRD COMMENTARY - Selection of comparators
The choice of the technologies was justified as TAH has been the traditional method of carrying out a hysterectomy, but LAVH was the only other accepted practice.

Validity of estimate of measure of effectiveness
This was a retrospective study based on the examination of hospital records. In order to reduce bias and confounding, a study should be a prospective study where the patients are randomly allocated to the two possible types of surgery. The authors successfully matched many of the patients' characteristics in the LAVH group. However, they did not match all the preoperative diagnoses. For example, 13 patients with preoperative cases of pelvic relaxation were not matched in the TAH group. Also, as the authors identified, some of the patients in the TAH group might not be suitable for LAVH.

Validity of estimate of measure of benefit
The authors did not calculate a summary measure of benefit. The fact that the effectiveness results showed a shorter hospital stay was one of the reasons used to argue that the patients could return to a normal life quicker with LAVH. It would have been useful if the authors had used some kind of quality of life questionnaire to assess the well-being of women after these two kinds of surgery.
Validity of estimate of costs
The authors did not break down the costs into the prices and quantities. This makes the cost results less transparent and harder to generalise. No price year was given. The costs excluded the surgeons' fees and only included the costs to the hospital. Since there was no follow-up after hospital discharge, it is unclear whether the costs included after this period would give a different perspective. The authors explained that excluding the indirect costs could possibly have biased their results against LAVH, due to a likely faster return to work.

Other issues
The authors made appropriate comparisons of their results with the findings from other studies. In addition, they addressed the issue of generalisability to other settings in terms of the expertise at their institution. The effectiveness results were reported in full, but there was a lack of cost data. The authors' conclusions were in keeping with the scope of the study.

Implications of the study
The authors make clear that when LAVH occurs without complications it brings benefits to the patient and will cost less. However, the high rate of complication that occurred with LAVH means that it cannot be recommended as a superior treatment. The authors suggest that a method of preselecting patients who have a good prognosis for successful LAVH would be one way of improving the outcomes for LAVH. However, any research would produce more reliable results if it were based on a randomised controlled trial. Also, the cost analysis should be more detailed and rigorous, enabling other institutions and countries to assess the applicability of the results to their setting.

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